

# American Artisan

THE WARM AIR HEATING  
AND SHEET METAL JOURNAL  
FOUNDED 1880



Garages Are Excellent Prospects for Sales Effort on Forced Air Heating. This Simple System Was Installed by B. F. John of Philadelphia. Details Are in This Issue

JULY 19, 1930

**5 WAYS TO MAKE MORE  
FURNACE PROFITS**

- 1 Develop Prospects
- 2 Sell a Good Furnace

# 3 • Surpass Competition

- 4 Cut Installation Costs
- 5 Keep Them Satisfied

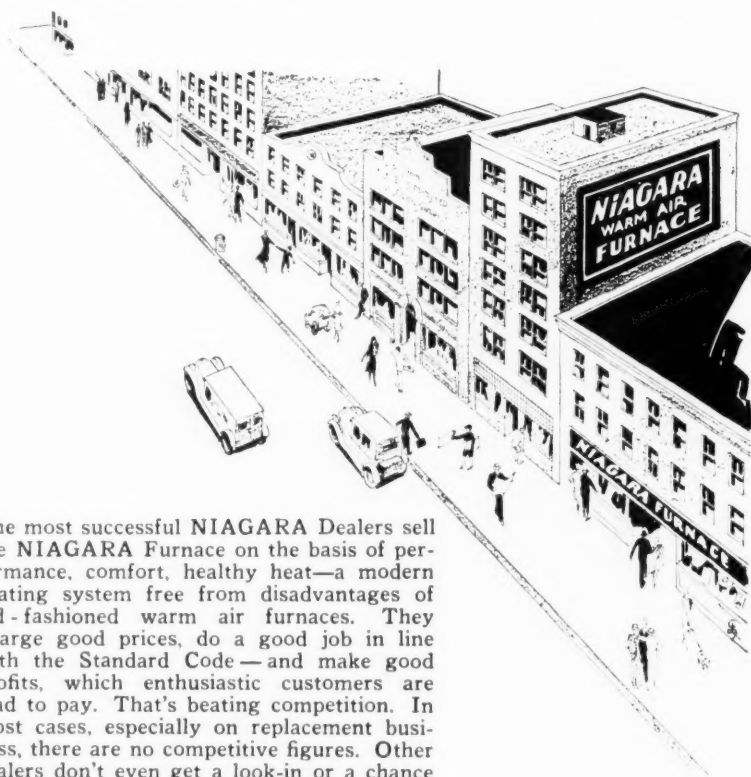
**THE A. B. C.'S OF THE FURNACE BUSINESS**

Whether it's furnaces, automobiles or furniture—it's quality that counts. It might seem possible to build a good volume for a time by cutting prices—by selling a cheap product. But the dealer is kidding himself in the long run, because he is sacrificing profit merely to appear busy and prosperous. Price alone cannot build a reputation and prestige. There must be quality. Buyers flock to the shop that has a reputation for quality at a fair price, and service that is a little better than they can get elsewhere.

*You can be the leading furnace dealer in your community by selling the NIAGARA—the furnace that is already accepted everywhere. A NIAGARA Dealer is always the leader (except when his own inertia keeps him from succeeding)*



The most successful NIAGARA Dealers sell the NIAGARA Furnace on the basis of performance, comfort, healthy heat—a modern heating system free from disadvantages of old-fashioned warm air furnaces. They charge good prices, do a good job in line with the Standard Code—and make good profits, which enthusiastic customers are glad to pay. That's beating competition. In most cases, especially on replacement business, there are no competitive figures. Other dealers don't even get a look-in or a chance to spoil the prospect with low prices, when a NIAGARA dealer employs this straightforward way of getting business.



# NIAGARA

## WARM AIR FURNACE

FOREST CITY WALWORTH RUN FOUNDRIES COMPANY  
CLEVELAND, OHIO

S

Mad

INDE



# 28% of all

## "Silent" installations are made

### in WARM AIR

### heating systems



FOR WARM AIR, STEAM AND  
HOT WATER HEATING SYS-  
TEMS—OLD OR NEW HOMES

**H**ERE is indisputable proof that Silent Automatic is *ideally suited* to installation in warm air heating systems. Moreover, this percentage of total installations is steadily increasing.

Silent Automatic, because of its NOISELESS wiping WALL-FLAME, has been installed with complete success in *thousands* of WARM AIR heating systems . . . as well as in many thousands of hot water, steam and vapor systems.

Owners of homes heated with warm air are

among the thousands of loyal and enthusiastic owners of Silent Automatics whose unqualified "owner satisfaction" has placed "Silent" in its position of *world-leadership*.

This outstanding record of success . . . these thousands of owners who *actively cooperate* in selling "Silents" . . . insure the success of "Silent" dealers.

**SILENT AUTOMATIC CORPORATION**  
12001 East Jefferson Ave. Detroit, Mich.

# SILENT AUTOMATIC



THE NOISELESS OIL BURNER

Made by the World's Largest Producer of Domestic Oil Burners

Published Every Other Week by Porter, Spofford, Langtry Corp., 139 North Clark Street, Chicago, Illinois. AMERICAN ARTISAN—the Warm Air Heating and Sheet Metal Journal—entered as second class matter, January 29, 1930, at the Post Office at Chicago, Illinois, under the act of March 3, 1879. Formerly entered on June 25, 1887, as American Artisan and Hardware Record.

INDEX PAGES—14 and 58

[VOL. 99, NO. 15—\$2.00 PER YEAR]

BUYERS' DIRECTORY—54 and 56

(327)

C O U P O N

**SILENT AUTOMATIC CORPORATION**

Please give me full information on the Silent Automatic Dealer Plan. I want to share in "Silent's" outstanding success

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_



*"Aristocrat"*  
WEIR FURNACE CO

E. A. FREED  
Gen'l Mgr

1530 3rd Avenue  
MOLINE, ILLINOIS

Phone Moline 1943

May 15th, 1930

The Meyer Furnace Co.,  
Peoria, Illinois

Gentlemen

It just occurred to me that it would be appropriate that I take a few minutes of my time to write and express my gratitude also to thank the Meyer Furnace Company for their wonderful co-operation which has in a great measure been instrumental in building up my home heating business into what I think is one of the most successful institutions of its kind in America.

Its "Royal Highness", WEIR the greatest warm air furnace I have ever laid eyes upon is directly responsible for the heaping measure of success which has been mine.

Quality Heating for the home has gone over big!-----and to anyone contemplating entering the home heating business or to any one only moderately successful and wishing to become a leader in the community I wish to give a word of advice: Hook up with "America's Aristocrat"---the finest built furnace the world has ever known.

From the business and professional standpoint WEIR is the only furnace in U.S.A. that I would back up with my own gold cash for it is quality clear through and builds--and keeps on building up my business year after year--and right now, just at this moment I was thinking of my success and how lucky I was to have come in contact with the Meyer Furnace Company and their wonderful WEIR Furnace--hence this letter.

Again I wish to "tell the world" of my gratitude and wishing The Meyer Furnace Company unlimited success in the marketing of fine heating service, I remain,

Yours very truly,

*E. A. Freed*  
Heating Engineer

## We're Proud— So Is Mr. Freed— of This Record!

Although he had only 9 months to go when he first engaged in business for himself (following eight years spent with a direct-selling furnace organization) Mr. Freed placed over a hundred WEIR furnaces that year—1925. And, as indicated in his letter, his business has grown from year to year—and is still growing.

## The Weir Dealership IS Profitable

The Meyer Furnace Company  
1300 S. Washington St. Peoria, Ill.

Say you saw it in AMERICAN ARTISAN—Thank you!

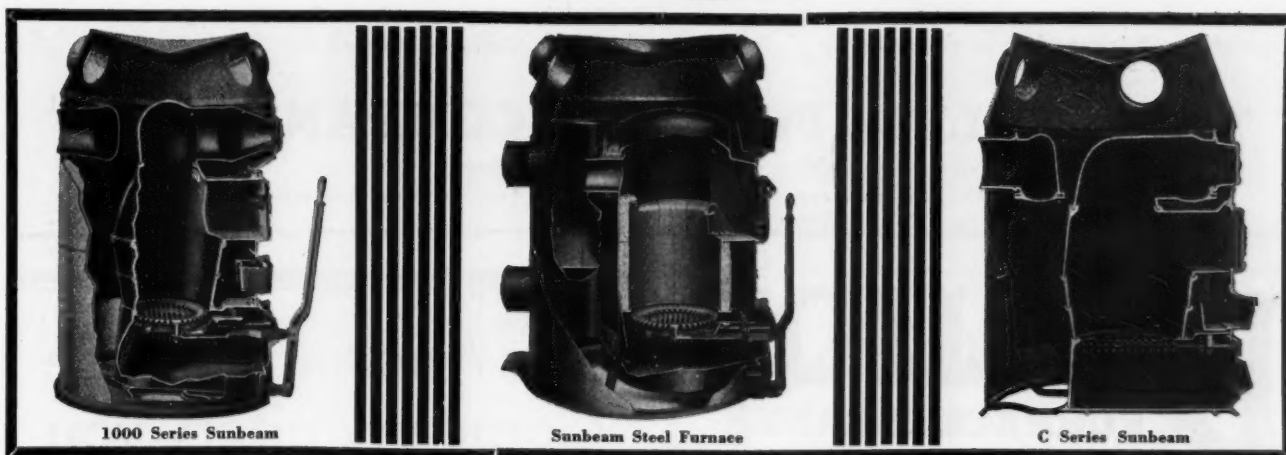
*Easiest  
to Sell—  
Sunbeam  
Furnaces*



## Sales Manager and Purchasing Agent —both agree on Sunbeam Furnaces



*Easiest  
to Buy—  
Sunbeam  
Furnaces*



1000 Series Sunbeam

Sunbeam Steel Furnace

C Series Sunbeam

*A Furnace for  
Every Requirement*

You probably function as your own sales manager and your own purchasing agent, yet in this double capacity you must look at the furnace business from two decidedly different angles.

Where is your profit, if the furnaces that you buy remain in the warehouse month after month? If they move slowly or require unreasonable selling time and effort? If prospects do not select them because of high price, low quality or a score of other reasons?

Where is your profit, if the furnaces you sell so easily require costly servicing; fail to bring in repeat business; do not establish a profit-building reputation for you?

Whether you look at the Sunbeam Line through your sales manager eyes or your purchasing agent eyes, you will find the opportunity for greater profits.

That Sunbeam Furnaces are easiest to buy and sell is demonstrated by the fact that more were sold by dealers last year than any other kind.

The coupon will bring you information that will enable you to determine the accuracy of these statements. Return it today.

*Quality and  
Price — Both*

**The FOX  
FURNACE  
COMPANY**  
ELYRIA, OHIO

A Division of American Radiator  
and Standard Sanitary Corporation



Please send your complete 1930  
Furnace Selling Proposition. Include  
a copy of the valuable 40-page  
Sunbeam Heating Manual.

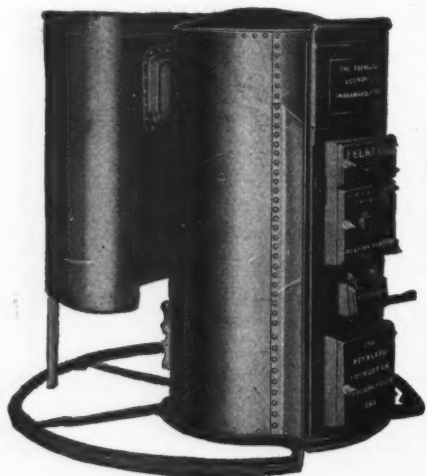
Name.....

Address.....

City and State.....

A-6

Say you saw it in *AMERICAN ARTISAN*—Thank you!



**The PEERLESS  
BOILER PLATE  
with  
SPECIAL OIL  
BURNING RADIATOR**

Ask about the Peerless Thermos Casing—it is especially desirable for oil or gas burning furnace.

Have you the right furnace  
to sell your prospects?

## **This PEERLESS**

is especially designed  
for oil burning

It has an indirect crescent shaped tubular type radiator, having *six times the length of fire travel*, and *three times* more heating surface than the coal burning radiator. It fits *any* Peerless Furnace or all other makes of steel and cast furnaces when the radiator collar of cast furnace is specified or the connecting collar of steel furnace is furnished us.

*Riveted and Welded*—positively smoke and gas tight. There is a humidifier on *all Peerless Furnaces*.

Write for the complete Peerless  
Catalog today

**The PEERLESS FOUNDRY COMPANY** INDIANAPOLIS, INDIANA

*Builders of the Peerless Cast Furnace*

Bailey-Farrell Mfg. Co.—Warehouse Distributors at Pittsburgh, Pa.—Warehouse, Youngstown, Ohio

## **BRILLION FURNACE CLEANER**

**NOW--is the  
time to get yours**

**HIGH  
GRADE  
but  
LOW  
PRICED**



The investment required to obtain a Brillion Cleaner is less than you think. It is so small that you can get one NOW and in a very short time have its cost back from cleaning profits this summer. The extra repair business and new furnace leads you pick up in getting this cleaner business will be all extra profit.

*Furnace cleaning is the BEST way to get in direct contact with live prospects.*

Make up your mind to do more sales work—the Brillion furnace cleaner will help you as nothing else can. Send the coupon today.

BRILLION FURNACE CO.  
Brillion, Wis.

a.a.

I am interested in going after warm air heating business by using furnace cleaning as my entry. Tell me all about the Brillion Furnace Cleaner.

Name.....

Address.....

City.....

State.....

## **The Midland Furnace Company offers you**

as a Dealer a better opportunity to make a better profit. It offers you an opportunity to sell the Midland EL CAPITAN to your neighbors and customers. You are assured a better profit because the EL CAPITAN is backed by sales co-operation. It is a furnace you can recommend without fear and with a certainty that you will increase customers' satisfaction. Investigate the Midland Sales Plan.

**MIDLAND FURNACE CO.**  
COLUMBUS, OHIO

Mention AMERICAN ARTISAN in your reply—Thank you!



Full-grained walnut finish, obtained by photographic process, makes the new Payne Console Heater look like a fine piece of furniture!

# ALL YEAR 'ROUND

● ● Even during hot Summer days the Payne Console Heater serves a useful purpose!

Designed for beauty as well as comfort, the Payne Console enters into the true spirit of modern home decoration. It become an ornament . . . useful as an occasional table for book ends, flower bowl, table lamp . . . or as a stand for an electric fan for circulating cool air during warm weather!

Even with heat turned on, the top and sides of this attractive heating device remain cool always. Controls are out of sight. Vent carries unhealthful fumes out of doors.

Fresh, pure, warm air circulates to every nook and corner.

No other cabinet heater offers so much beauty and practical utility combined. Write or wire now for complete sales literature and prices.



## PAYNE Console HEATER

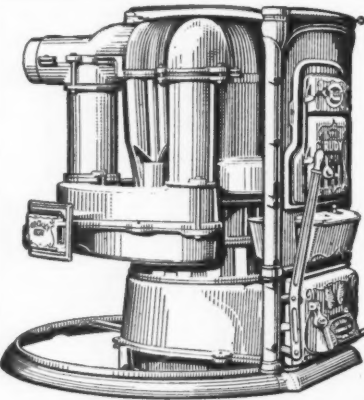
MANUFACTURED ONLY BY THE PAYNE FURNACE AND  
BEVERLY HILLS,



SUPPLY COMPANY, INC.  
CALIFORNIA

THERE'S A PAYNE HEAT SYSTEM FOR EVERY CLIMATE AND BUILDING

Say you saw it in *AMERICAN ARTISAN*—Thank you!



**RUDY**  
UNQUESTIONED  
QUALITY  
INTELLIGENT  
LEADERSHIP  
CORRECT  
ENGINEERING  
Progressive Policies—  
Fair Prices — Honest  
Treatment  
*We will honor  
your inquiry*  
**RUDY**  
FURNACE CO.  
Dowagiac, Mich.

Rudy Hy-Power

**WATERBURY**  
**SEAMLESS FURNACE**  
REG. U.S. PAT. OFF. *The Leader of*  
*All-Steel Heating Systems*  
**The Waterman-Waterbury Co.**  
1122 Jackson Street N. E.  
Minneapolis, Minn.

You can assure your customers 35  
to 55% relative humidity with the

**FARRIS  
WATERBASE  
FURNACE**

*Write for full details today*

**FARRIS FURNACE COMPANY**  
SPRINGFIELD      Established 1899      ILLINOIS

**MONCRIEF**  
THE  
SERIES  
"C"  
**FURNACES**  
All types and sizes  
for all house heating  
needs.

**The Henry Furnace  
& Foundry Co.**  
3471 East 49th Street  
Cleveland, Ohio

THE NEW  
MONCRIEF  
STEEL FURNACE



**An Emblem of Quality**

The dealer who has never sold Torrid Zone steel furnaces has no conception of the many advantages this furnace line offers. To say you are familiar with Torrid Zone construction is not enough. There are, free engineering service, newspaper and dealer help advertising, financial aid, an unusual variety of furnace sizes, quick deliveries made possible by large warehouse stocks, and a score of other Torrid Zone service features of vital interest to every furnace dealer. Why not investigate for yourself Torrid Zone possibilities. Write for complete information on the Torrid Zone line.

**LENNOX FURNACE COMPANY, INC.**  
Marshalltown, Iowa      Syracuse, N. Y.      Toronto      Winnipeg



**Let this Trade Mark help you  
Sell Furnaces**

*Write today for complete information*

**THE BECKWITH CO.**      Dowagiac, Mich.

Your prospects will  
prefer the—

**GILTEDGE  
FURNACE**

and you will prefer the profits and  
prestige the agency bring you

**R. J. SCHWAB & SONS CO.**  
283 Clinton Street      Milwaukee, Wis.

For installations of  
superior heating  
service—choose

**Vernois**  
**FURNACES**

Write for complete catalog  
MT. VERNON FURNACE & MFG. CO.  
Mt. Vernon, Ill.



**MASTER**  
HEAT REGULATOR

Type 22

**FULL ELECTRIC**

**Fills the BIG demand**

**\$80** Full Electric.  
8-Day  
Jewelled Clock

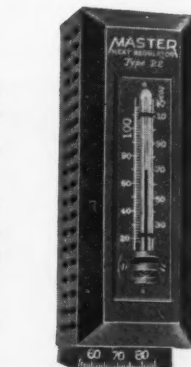
**8-Day Jewelled Clock.** Automatically turns heat on and off, morning and night.

**Closer Regulation.** Acts instantly when heat changes 1° or less if desired.

**Flawless construction—long life—dependable service.** Made by the manufacturers of the MASTER gradual operation Heat Regulator.

**A money maker for dealers. Write today for complete details.**

**WHITE MFG. COMPANY**  
2362 University Ave. St. Paul, Minn.



Full Electric,  
Without Clock  
Control **\$55**



**Business is Good**

Our one-man outfit makes low overhead

**A** FLINT, Mich., user's good judgment is confirmed. He writes: "The Super Suction Cleaner for furnaces has proved an entire success. We have worked up a nice business and are increasing our orders as we go."

*Why not you, too? Try a Super Suction free. Flint did—you cannot lose. Our Plan Book—also free—shows the easy steps to success. Write today about this free trial*

**THE NATIONAL SUPER SERVICE CO.**  
1944 N. 13th Street Toledo, Ohio

**Make more sales by offering this feature on every Furnace Installation**



**THE FURNACE DUST ELIMINATOR**

It keeps dust from spreading throughout the house—makes ash removing a clean job—makes furnace more efficient and prevents burnt out grates. Your customers despise the dirty job of removing ashes—this feature will appeal to them. It costs little but makes more profitable sales for you. It is a new exclusive patented feature you can adopt for your line of furnaces. Easily attached on the water connection and ash pit door.

*Write for illustrated circular and prices today*

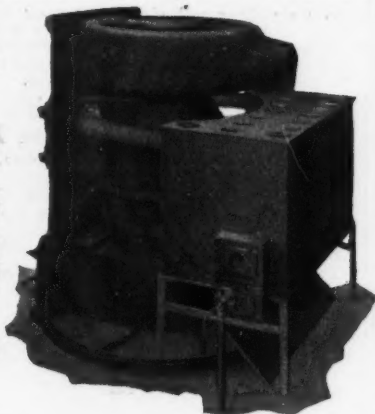
**DUSTLESS ASH COMPANY, MUSKEGON, MICH.**

**You can sell GAS HEATING to OLD as well as new customers with**

**The MUNKEL GAS ATTACHMENT**

It fits any coal furnace—it heats both units giving extra large radiating surface. Simple, efficient, economical and easy to install. Stimulate business and make more profits with the Munkel Gas Attachment. Write today for full details

**The MUNKEL-RIPEL HEATING CO.**  
"31 Years of Service"  
Columbus, Ohio




**A FINE DAMPER**  
Attractively Priced

**FORMERLY** sold under the trade name "STAR," this steel damper has been very popular for years. It is exceptionally well made. Handle enters either side of disc. Furnished in 6", 7", 8", 8 1/2", 9", 10", 12" and 14" sizes.

*Samples and prices on request*

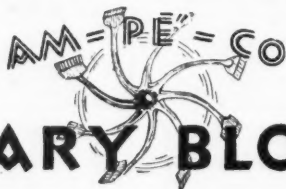
**STURDY—ECONOMICAL No-Rivet Clips and Tips**

Made of heavy gauge steel. Prongs provide quick, and secure means of fastening to disc without rivets. Also punched with rivet holes.

*Investigate these popular items before stocking up for the season.*

**HART & COOLEY MFG. CO.**  
Successors to Federal Mfg. Company  
SALES OFFICES:  
Chicago, 61 W. Kinzie St.; Philadelphia, 1600 Arch St.; New York, 101 Park Ave.; Boston, 75 Portland St.; New Britain, Nashua  
FACTORY AT HOLLAND, MICHIGAN

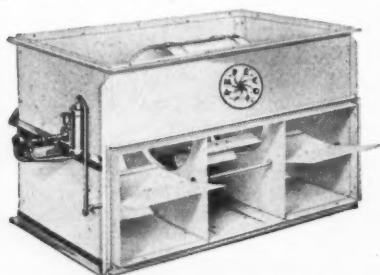
## Improve Your Warm Air Heating Installations and Make an EXTRA Profit on the Job!



### ROTARY BLOWER

#### AM-PE'-CO Rotary Blower WITH DAMPERED OUTLETS

This Rotary Blower is operated by an oil pump and regulator of our own design insuring positive operation. As soon as the Blower stops the dampers open automatically.



"THERE IS NO DOUBT ABOUT IT  
—The Dampers Are Either Open or  
Closed."

An Am-Pe'-Co Rotary Blower insures a comfortable home in winter by thoroughly circulating the warm air. In summer it will cool the home.

Just think how much easier it is to sell a double purpose installation and besides you make an *extra profit* on the job!

Get behind this new system of warm air heating and become a recognized leader in your country.

*Let us tell you all about the Am-Pe'-Co Rotary Blower, how it is made, the details of its installation and give you prices. Write today.*

**American Machine Products Co.**  
MARSHALLTOWN, IOWA

## If you want to increase your Sheet Metal Business

Give Your Architect  
a Copy of

## Standard Practice in SHEET METAL WORK

Published by the  
National Association of  
Sheet Metal Contractors

SEND THE COUPON FOR FULL DETAILS

AMERICAN ARTISAN  
139 North Clark Street, Chicago

Tell me all about the big Association Book Standard Practice in Sheet Metal Work.

Name.....

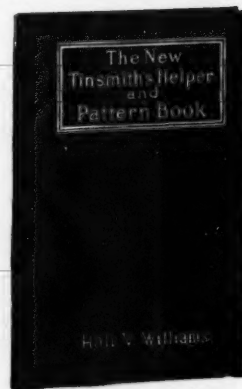
Address.....

Town.....State.....

352  
Pages

247  
Figures

165  
Tables



Flexible  
Leather  
Binding

Measures  
4 1/2 x 5 in.

### One of the Best and Most Popular Books

on tinsmithing and elementary sheet metal work. This is the latest edition and the contents are new excepting the chapter on Mensuration, which has been re-arranged and amplified, and possibly some fifty pages of problems and tables which are classified to the phase of the work they cover.

#### This Book Covers Simple Geometry and Every Phase of Modern Pattern Cutting

from the making of every type of Seam, Lap and Joint, to Conical Problems and Tinware, Elbows, Piping, Ducts, Gutters, Leaders, Cornice and Skylight Work and Furnace Fittings.

In fact an excellent all-around book for every man in the trade. Mr. Williams writes in an easy-to-read, helpful manner, giving you all the necessary details about each subject he handles.

You should add this widely read book to your collection now.

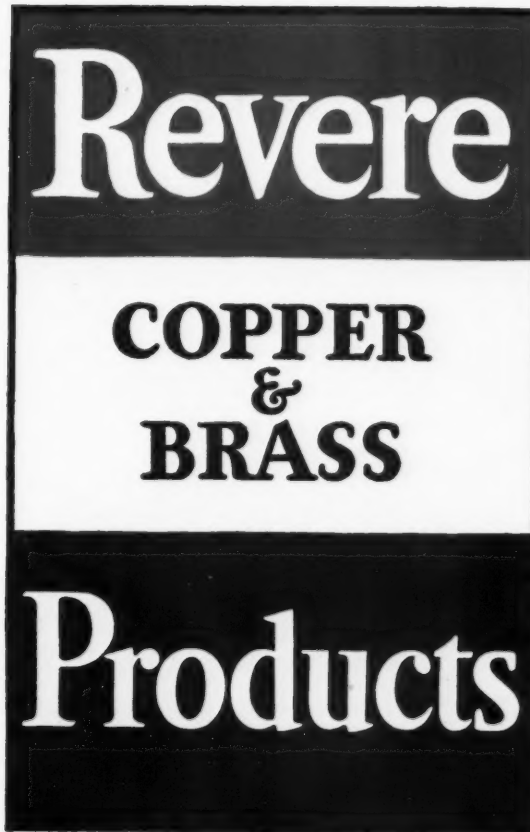
PRICE \$3.00

**AMERICAN ARTISAN**

139 North Clark Street

CHICAGO

Mention AMERICAN ARTISAN in your reply—Thank you!



*All*  
**Revere Products**  
marketed under this label

THE SEVEN PLANTS of Revere Copper and Brass Incorporated make a complete line of copper, brass and bronze products of finest quality.

All Revere products will be marketed under the Revere red, white and blue label.

This label stands for reliability, responsibility and service. The Revere organization is the oldest, their copper mills, located at important industrial centers, are the largest, and their equipment is the most modern in this country.

---

SEVEN  
REVERE PLANTS . . . . . See next page ➔

## *These 7 plants*

1. Baltimore, Md. . . . Baltimore Copper Mills
2. Chicago, Ill. . . . Dallas Brass & Copper Co.
3. Detroit, Mich. . . . Higgins Brass & Manufacturing Co.
4. Detroit, Mich. . . . Michigan Copper & Brass Co.
5. New Bedford, Mass. . . . Taunton-New Bedford Copper Co.
6. Rome, N. Y. . . . Rome Brass & Copper Co.
7. Taunton, Mass. . . . Taunton-New Bedford Copper Co.

*manufacture*

# Revere

## COPPER *and* BRASS

## PRODUCTS

+

PAUL REVERE, in 1801, installed the first copper rolling mill in this country, which was operated by Paul Revere and Son. In 1828, Paul Revere and Son, combining with James Davis and Son, brass founders,

started a chain of consolidations which finally culminated in Revere Copper and Brass Incorporated. This organization now operates seven plants, comprising better than 25% of the copper, brass and bronze mill capacity in this country.

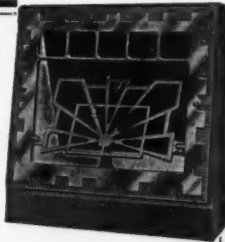
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Revere Copper and Brass Incorporated  
General Offices, Rome, N. Y.

Our customers tell us that this register doesn't streak the walls and that it is quickly installed.

**ALL THIS AND MORE,  
AT NO GREATER  
COST**

**SYMONDS REGISTER COMPANY**  
3117-23 Minnesota Ave. St. Louis, Mo.



*"It's different  
from all the  
rest"*



**A new furnace paste  
FOR BETTER, NEATER  
AND QUICKER WORK**

**Non-Cereal—Non-Souring**

Asbestos Paper will not absorb it as it does cereal pastes. Paper does not become soggy—not so apt to tear.

Larco Mineral Paste does not turn brown—no stains—mice will not touch it either when moist or dry and it does not gum up the hands.

Larco Paste can be kept on hand mixed ready for use. It has greater covering qualities. It slips easily but adheres permanently.

Order a trial can now—it will not sour—keeps any length of time.

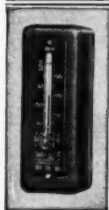
Write for circular which tells all about it—get Larco prices.

**WESTERN MINERAL PRODUCTS CO.**

OMAHA

(Formerly Larsen-Bennett Co.)

NEBRASKA



**only \$48 installed**  
dealer price \$22.75



"Sheer Comfort" Heat Regulator gives all electric and fully automatic control over the draft and damper doors of home heating plants. Four exclusive safety features found in no other heat regulator at any price—yet costs less than any other electric regulator on the market. Ask your jobber or write H. M. Sheer Co., 213 Hampshire St., Quincy, Ill.

**SHEER COMFORT**  
*heat Regulator*

**"American Seal"**

**FURNACE CEMENT**

**Roof Cement—Stove Putty  
Plumbers Putty**

**PAINTS AND SPECIALTIES**

**WILLIAM CONNORS PAINT MFG. CO.**

Established 1852

TROY

NEW YORK

JAMES L. PERKINS, Western Distributor  
140 South Dearborn Street, Chicago, Illinois

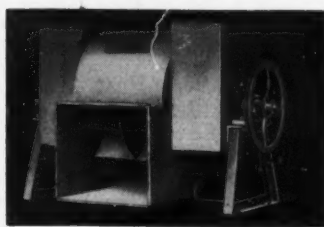
**Furblo The Furnace  
Blower Everyone Recommends**

MANUFACTURERS have adopted FURBLO as standard equipment—jobbers catalog FURBLO exclusively—dealers everywhere find FURBLO the one and only satisfactory solution to the problem of mechanical warm air heating.

FURBLO is not a fan—but a blower. Quiet, efficient, powerful, sturdy, dependable. Guaranteed to always produce on even the hardest job.

**Lakeside Company**  
Dept. AA7 Hermansville, Mich.

Makers of Lakeside Ventilating Equipment



Two sizes fit practically all installations. Send for complete information.

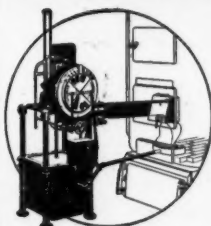
**LAMSON  
& SESSIONS CO.**

CLEVELAND, OHIO

Plants at Cleveland and Kent, Ohio; Chicago and Birmingham

**Balanced Heat**

**The McIlvaine Method  
of Oil Heating**



Listed as Standard by Underwriters  
Approved by New York Board of Standards and Appeals

With the fidelity of a well-balanced scale, the amount of heat supplied by the McIlvaine Method automatically increases or decreases exactly as the temperature outside demands. Thus, an even temperature is maintained indoors, all winter long. The McIlvaine Continuous Flame Oil Burner (recommended by the leading warm air heating experts) with its five flame sizes, automatically balanced to the heat demand, gives positively satisfactory results, and is highly efficient when installed in warm air and other types of residence heating systems.

**WRITE NOW**  
for dealer's proposition, sales plan and complete information.

**McILVAINE BURNER CORPORATION**  
747 Custer Avenue Dept. A Evanston, Ill.

**ELIMINATE  
SOLDERING WASTE**



Separate fluxes waste 50% of your soldering time, labor and materials. Eliminate them. Cut your costs in half—double your efficiency with Kester Self-Fluxing Acid-Core Solder. Made in many gauges—in 1, 5 and 20 lb. spools. Write for free samples of the new Kester Body Solder. From all jobbers.

**KESTER SOLDER COMPANY**

Incorporated 1899

4241 Wrightwood Avenue

Chicago

**KESTER  
FLUX-CORE  
SOLDER**

Say you saw it in AMERICAN ARTISAN—Thank you!

Entered as second class matter, January 29, 1930, at the Post Office at Chicago, Ill., under act of March 3, 1879. Formerly entered on June 25, 1887, as American Artisan and Hardware Record.

Founded 1880  
**American  
 Artisan**  
 THE WARM AIR HEATING  
 AND SHEET METAL JOURNAL

Yearly Subscription  
 Price:  
 United States .....\$2.00  
 Canada .....\$3.00  
 Foreign .....\$4.00  
 Single Copies .....25c

Published EVERY OTHER SATURDAY—to Promote Better Warm Air Heating and Sheet Metal Work

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**PORTER-SPOFFORD-LANGTRY CORPORATION**

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 Charles E. Kennedy    —    J. F. Johnson

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 Frank G. Cambria, Eastern Representative

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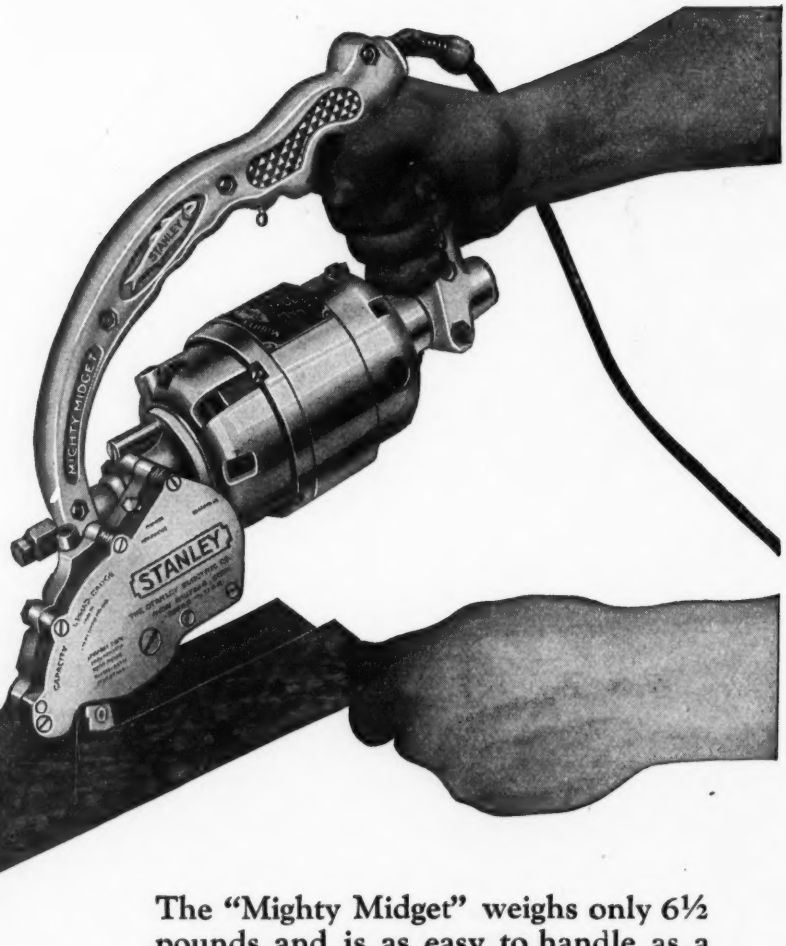
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# American Artisan

THE WARM AIR HEATING  
AND SHEET METAL JOURNAL



Vol. 99

CHICAGO, JULY 19, 1930

No. 15

## This Accessory Business

**M**OST of us can readily remember when the automobile was sold "Less Accessories." It was sold that way because manufacturers were afraid the public wouldn't pay another hundred or two for bumpers, self starters, locks, etc.

The manufacturers were selling price—not transportation.

Today we expect the factory to build these into the car as a necessary part of the vehicle.

Exactly the same situation exists in the warm air heating field.

We are selling the public a heating plant.

We ought to be selling made-to-order weather.

The public is buying a heating plant for just one reason—to keep itself warm.

The furnace will keep the public warm if we see that the furnace is large enough; that it is installed according to code; and that it is as good a heating plant as the public pocketbook will stand so that it will work efficiently for a long time.

But let's believe for a minute that the furnace is an automobile. The public demands comfort. We've given them that by giving them the right size, correct installation and good merchandise.

That satisfies their primary desires. Then they want convenience. They probably want convenience even more in a furnace than in their car—but we don't positively know because we have been too lazy to find out.

The public won't crank a car. In fact they don't even want to wash and dust it. Why, then, expect them to want to shovel coal, carry ashes and get up early in the cold morning to "open her up." The public wants their heating plant to operate on the least possible attention. That's why they have bought so many thousands of oil burners, stokers, gas burners.

Why, then, hasn't it occurred to the warm air heating man that he ought to sell oil burners, stokers, gas burners? All these are logically a part of the heating plant and should be installed and serviced by a heating man.

If you can't swing these big accessories there are the smaller and less expensive accessories which are just as important from the sales standpoint. The public is intensely interested in humidity. They are beginning to talk about it over the dinner table, in the trains and

street cars. Yet the warm air heating men who actually ring door bells to sell humidifiers to the housewife are scarcer than hens' teeth.

We have been talking for the past three or four years of the sales advantages of furnace cleaning; how it gets us into basements and makes the road clear for repairs and replacement jobs. We've talked so much about cleaning that even the retail coal dealers are cleaning furnaces.

Why don't we use the same tactics to sell humidifiers? The housewife wants correct humidity. The price is not high. But the results are astounding. Maybe we won't make enough profit on humidifiers to let everything else drop, but it means selling a product that is riding the wave of popularity.

The same thing is true of fans and blowers. Moving air through the furnace and into the house by some mechanical means is very much to the public's fancy. They associate this kind of heating with the heating they enjoy in their favorite theatre. They understand that warm air, circulated through a room, provides uniform comfort. They are now beginning to inquire why such equipment can't be used to create air movement in the hot days of summer. Here again it is possible to ride the crest of the wave of popularity.

It only remains for the public to be sold air movement as an integral part of every modern heating plant to open up an unheard of field for new furnaces and accessories.

The public is certainly willing to buy controls which let them go to their card parties, theatres and movies and keep the house comfortable until they return. No man living but wants a control which eliminates the necessity of getting out of bed early on a cold morning to "open her up."

Yet the field of automatic control hasn't been looked at, let alone scratched. Every furnace dealer is looking for something to sell which puts his heating plant out of the class of his competitor, yet automatic control has been passed by mainly because we have been afraid to ring door bells.

If we can only remember that heating plants and automobiles have much in common; that the public wants exactly the same things in a furnace that they want in a car, we can sell accessories.

# The Seventh Article On Cost Accounting

**I**N previous articles we have discussed the accounts, their names and uses. We now come to the mechanics of bookkeeping — the means by which we record the transactions as they occur and sort them according to the accounts affected. This recording and sorting device is called a "Journal."

In planning our chart of accounts, we have considered the activities of the business and provided such accounts as will properly explain the activities. We must also analyze the business in planning our journals. In most cases, we find the activities naturally fall into three general classes—Purchasing materials and supplies; Selling; and the Receipt and Disbursement of Cash. For these classes of activities, we provide separate journals—a Purchase Journal, a Sales Journal and a Cash Journal. There are occasional transactions which do not fall within these three classes, and for such as these we provide a General Journal.

## Purchase Journal

The transactions covering purchases are entered in the Purchase



Joseph G. Dingle, C. P. A.

Journal, illustrated herewith. Applying our bookkeeping rule of "Debit the Disposition and Credit the Source," we find that the source of our purchases is "Accounts Payable," and we have provided a column headed "Accounts Payable—Credit." The bulk of our purchases will be Materials and Supplies, and we have provided a column for each. For such purchases as are neither Materials nor Supplies, we have provided a double

column headed "General" with sub-headings "Account" and "Debit." In Account Column we show the account to be charged and in "Debit" column we show the amount. There are also columns for "Invoice No.," "Date," "Description" and "Paid." Let's enter a few invoices and see how this journal works.

Invoice No. 1. On June 6 we bought from Meyer Furnace Co. Materials costing \$200.00. Under Materials we show \$200.00 and a like amount in Accounts Payable column. We have debited Materials and credited Accounts Payable with \$200.00.

Invoice No. 2. On June 6 we bought from National Super Service Co. a Super Suction Cleaner, and accessories, amounting to \$300.00. We enter, in "General" columns Equipment account and under Debit we show the \$300.00 and our credit is to Accounts Payable.

Invoice No. 3. On June 7 we enter Lamson & Sessions Co.'s invoice for bolts. These bolts are Supplies, therefore we show in

P. 1

PURCHASE JOURNAL									
Month of June 1930									
GENERAL		MATERIALS	SUPPLIES	INVOICE	DATE	DESCRIPTION	ACCOUNTS	PAID	
ACCOUNT	DEBIT	DEBIT	DEBIT	NO.			DEBIT	DATE	(C. No.)
		200.00		1	6	Meyer Furnace Co.	200.00		
Eqpt	300.00			2	6	National Super Service Co.	300.00		
			35.00	3	7	Lamson & Sessions Co.	35.00		
	300.00	150.00	35.00	4	8	Milwaukee Corrugating Co.	150.00		

This is a sheet from the Purchase Journal as it appears when the first transactions of our business are entered. The left-hand columns are the "debit" side of the page and under separate heads we enter the costs of equipment. At the right we "credit" these purchases against their source, or, in other words, to the company from which we buy

"Supplies" column the debit of \$35.00 and in Accounts Payable column we place our credit of a like amount.

Invoice No. 4. On June 8 we enter an invoice from Milwaukee Corrugating Co. for materials costing \$150.00. We debit Materials and credit Accounts Payable.

Let's assume that we have no more invoices for June and we are now ready to close our books for the month. We foot our columns and prove our work. We find:

Column	
General—(Eqpt.)	
(debit) .....	\$300.00
Material (debit) ....	350.00
Supplies (debit) ....	35.00
Accounts Payable	
(credit) .....	\$685.00
Adding our debit column foot-	

P 1 as the folio. While there are two items in this Material Column, we post the columnar footing of the separate items. Should occasion arise where we require information concerning the detailed purchases, we can obtain such data from our journal. This method saves a great deal of posting to the Materials Account. Continuing, we post the \$35.00 as a debit to Supplies Account and the \$685.00 as a credit to Accounts Payable.

Notice, if you will, that we post the column total. The four invoices amount to a total of \$685.00, which is the amount credited to Accounts Payable.

We open a new Purchase Journal sheet for July and here enter all invoices as they are received, and checked against the goods. No

able, and a credit to either Sales of Labor or Sales of Materials, or both Labor and Material. Let's enter a few sales.

On June 8, Henry Brown is charged with \$350.00 on Job No. 4, which is credited \$200.00 to Sales of Labor and \$150.00 to Sales of Material.

On the same day we charge John Smith with \$30.00 which is credited to Sales of Material. There was no labor in this sale, simply materials sold in the same condition as when purchased.

On the same day we charge Frank Jones with \$10.00, which is credited to Sales of Labor. This was a repair job not using any new material.

At the close of the month, we foot our several columns and prove.

SALES JOURNAL

51

MONTH OF *June*

1939

DATE	ACCOUNTS RECEIVABLE		DESCRIPTION	JOB NO.	SALES OF LABOR		SALES OF MAT'L	
	DEBIT	CREDIT			DEBIT	CREDIT	DEBIT	CREDIT
8	350.00		<i>Henry Brown</i>	4		200.00		150.00
8	30.00		<i>John Smith</i>	X				30.00
8	10.00		<i>Frank Jones</i>	X		10.00		

The Sales Journal sheet is a condensed statement of what we are going day by day. For example, on this page we show three transactions. To Henry Brown we sell a \$350 job. The \$350 is "debited" under Accounts Receivable, for we must collect for the work. This \$350 is split up and entered under "credit" at the right. Here \$200 is accounted for under Labor and \$150 under Material. If the sale is all material, as for John Smith, no labor "credit" appears

ings we find they equal our credit column footing. We are now ready to post these items to our ledger. We post to Machinery and Equipment Account a debit item showing:

June 6—P 1 (to show that the entry is from Purchase Journal—page 1) \$300.00. Then check the \$300.00 item on the journal to show that it has been posted. We turn to Materials account in the ledger and post a debit item of \$350.00 showing June 30 as the date and

invoice should be entered until the goods are received and found correct as billed.

#### Sales Journal

The Sales Journal illustrated here is, like the Purchase Journal, just described, a columnar journal and provides debit and credit columns for Accounts Receivable, Sales of Labor and Sales of Material. It also has date, description and Job. No. columns. A sale involves a debit to Accounts Receiv-

We find a debit to Accounts Receivable of \$390.00, and credits of \$210.00 in Sales of Labor and \$180.00 in Sales of Material. We post these three columnar footings to the proper accounts in our General Ledger, showing June 30 as the date, S-1 as the source of the entry (Sales Journal—page 1).

We also post the individual charges to the proper accounts in our Accounts Receivable Ledger. We open an account for each of these customers and post the date,

the journal folio and the amount.

Under "Job No." for the Smith and Jones sales no Job Number is shown. This indicates that these sales were made without estimate, and were completed the day they were started. On the Cost Sheets you would have accumulated the costs of these separate jobs. Job No. 4, the Henry Brown Job, was an estimate job and was of some

mended that a separate Cost Sheet be kept for each day, whereon these sundry cash sales are entered in such detail as will enable the book-keeper to enter as a debit to Cash Sales account in the Accounts Receivable Ledger a sale for each day, classifying such sales as Material Sales or Labor Sales as the case may be. Such handling of Cash Sales will permit us to treat them

mer pays, we must record, in the Cash Journal the fact that we have received cash from an Account Receivable—or customer.

### Cash Journal

The Cash Journal is a double page form, and is designed to receive entries affecting both the receipt and disbursement of Cash. Note, if you will, the column head-

C 1

## CASH JOURNAL

(DOUBLE PAGE FORM)  
LEFT HAND PAGE

MONTH OF June 1930

ACCOUNTS RECEIVABLE		DISCOUNT	CASH		DATE	DESCRIPTION	CHECK No.	BANK	
DEBIT	ALLOWED	DEBIT	CREDIT	DEBITS				CREDITS	
350.00	7.00	343.00			10	Henry Brown			
					11	Note Payable - FNB - Due 7/11/30		500.00	
25.00		25.00			11	Cash Sales			
			360.00		11	Deposit		360.00	
					10	W. Landlord Rent to 6/30/30	1		50.00
					10	Mary's Furnace Co.	2		176.00

The Cash Journal is a double page form. Let's look at Henry Brown's account again. Under Accounts Receivable, which in street language means what our customers must pay us, we enter the item of \$350. This is "credited" to Brown. But we allow him 2 per cent for cash. This is \$7. This \$7 appears in the next column. Then \$350 less \$7 leaves \$343, or the amount we really received. This shows up under the Cash heading

C

(DOUBLE PAGE FORM)  
RIGHT HAND PAGE

## CASH JOURNAL

MONTH OF June 1930

ACCOUNTS PAYABLE		DISCOUNT	OFFICE	DELIVERY	FREIGHT	GAS &		ACCUMULATED	GENERAL	
INVT. No.	DEBIT	TAKEN	EXPENSE	EXPENSE	EXPENSE	OIL		PRY ROLL	DEBIT	CREDIT
										500.00
1	200.00	4.00								196.00

The right-hand sheet of the pair contains headings for Accounts Receivable and for our various expenses which have to be counted into each profit; in other words, our Overhead. The text explains how the various items shown here are taken from transactions and placed under the proper heading

duration. The Cost Sheet would show the actual cost of Material and Labor used to complete the work.

Under General Journal we will take up the journal entries covering the cost of sales.

Cash Sales arise in all shops and cover a great number of small transactions. They usually consist of small repair jobs and minor sales of material. For convenience in handling such items, it is recom-

as they should be—as a regular sale. The days cash sales may be entered in Sales Journal as one item. See remarks under "Cash Journal" concerning the collections of Cash Sales. The only difference between a Cash Sale and a Charge Sale is the interval of time between purchase and payment. We first sell the goods, and then collect the account. In the Sales Journal we merely record the sales, whether cash or charge. When the custo-

ings. They are, to a great extent, self-explanatory. The principal source from which we receive cash is our customers—Accounts Receivable. They sometimes are allowed a discount for prompt payment of the account. On line 1, we show the collection from Henry Brown of his account for \$350.00 (See Sales Journal), and the allowance to him of a 2 per cent cash discount. We credit Henry Brown—Accounts Receivable—with the

\$350.00. We debit Cash \$343.00 (the actual cash received) and debit Discount Allowed \$7.00—thus completing our entry.

Suppose we borrow some money—say \$500.00—from the bank on a note. Our entry will be to debit the Bank column and show (on right hand page) under GENERAL, Credit Column, the source. The debit is direct to our bank account for the reason we never ac-

columns we show "Invoice No. 1" and the amount of the invoice—\$200.00.

Suppose we purchase, out of the cash drawer, 10 gallons of gasoline for the truck. We would write in Description column "Gas for Truck," show in Cash Credit column the amount paid, and in Gas & Oil column show a like amount.

Your attention is called to the fact that each entry is complete in

entry will be to Debit Work in Process and Credit Materials—Inventory account with the cost of these materials so used. See entry on lines 1 and 2.

We will also, from our cost sheets, covering work completed and billed through the Sales Journal during the month, determine the material and labor costs on such jobs and make our entry as is next shown on our General Journal. We

GENERAL JOURNAL									
MONTH OF 193									
COST SALES LABOR	COST SALES MATERIAL	WORK IN PROCESS	GENERAL	DATE	DESCRIPTION	GENERAL	WORK IN PROCESS		
		750.00			Work in Process				
					Materials Inventory	750.00			
					Cost of Materials used				
250.00					Cost Sales Labor				
	300.00				Cost Sales Material				
					Work in Process		250.00		
					Completion during month				

The General Journal serves mainly as a sorting rack to hold work which is going through the shop, but does not fall under one specific job. The text explains this fully

tually received the cash—the bank gave us credit for the proceeds of the note.

The Cash Sales for the day amounted to \$25.00 (they are not yet shown on Sales Journal). We debit Cash and Credit Accounts Receivable with the \$25.00 on line 3. We make a deposit—depositing \$360.00. See entry on line 4. Our cash on hand should now be \$8.00. We received \$343.00 from Brown and \$25.00 from Cash Sales, making a total of \$368.00. We deposited \$360.00, leaving a balance on hand of \$8.00.

We draw Check No. 1, payable to our Landlord for the Rent—\$50.00. On line 5, we credit the bank and (right hand page) in General debit column, we charge Rent.

We pay Meyer Furnace Co. their invoice (our No. 1 in Purchase Journal), deducting 2 per cent discount. See line 6 for this entry, with a credit to the bank for the amount of the check—\$196.00; a credit in Discount Taken column for \$4.00, and in Accounts Payable

itself. It records the receipt or disbursement of cash, either as cash or as a deposit in or withdrawal from the bank. You can, I am sure, apply our rule of Debit the Disposition and Credit the Source in each of these transactions. If you will foot these several columns, you will find that the debit footings will equal the credit footings.

At the close of the month, after footing all columns and proving them—that the debits equal the credits, we post the columnar footings to the proper accounts. Each item in General columns must be posted to its proper account.

### General Journal

The General Journal is designed to record transactions which do not properly belong in either of the three specific journals. It will be used principally to transfer costs from Work in Process to Cost of Sales—Labor and Cost of Sales—Material. At the close of each month, we make up from our material tickets, a summary of all material put into process and our

debit Cost of Sales—Labor, \$250.00 and Cost of Sales—Material, \$300.00, and credit Work in Process with \$550.00. This transaction is here shown in totals. It would, ordinarily, be shown by separate jobs, with debits to the cost of sales columns for Material and Labor and credit to Work in Process column.

At the close of the month, after all entries have been made, the columnar footings will be posted to the proper accounts. Items appearing in General columns will be posted separately to proper accounts.

Depreciation will be entered in General Journal, debiting the expense account Depreciation and crediting Reserve for Depreciation. These items will be placed in the General columns.

\* \* \*

We have illustrated the four journals—each having a specific purpose. In each case we have given a general discussion of the use. If you have been unable to  
(Continued on page 40)

# Garages—

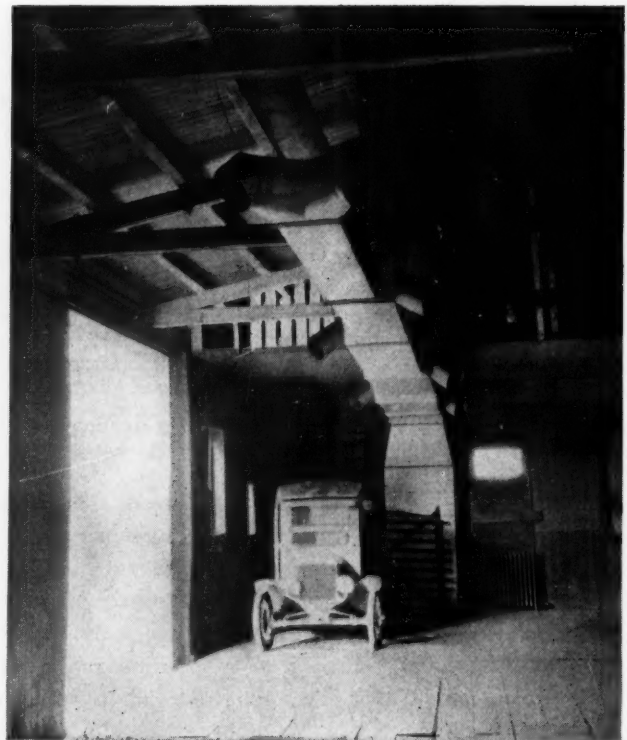
An Easy and Profitable Field for the Warm Air Heating Man Selling Forced Air. B. F. John, Philadelphia, Sold This One and Many More

ONE of the most profitable commercial structure heating fields warm air heating men have yet discovered is the public garage. These buildings, like the open industrial plant, have always been hard to heat. The steam men hung coils over and around their ceilings and walls and could not turn the trick. So, also, the hot water man. It remained for the warm air heating installer to demonstrate how simple systems of ducts, so arranged as to direct streams of warm air gently over the floor space could make working conditions just right.

The result has been that hundreds of public garages are warm air heated and they like it.

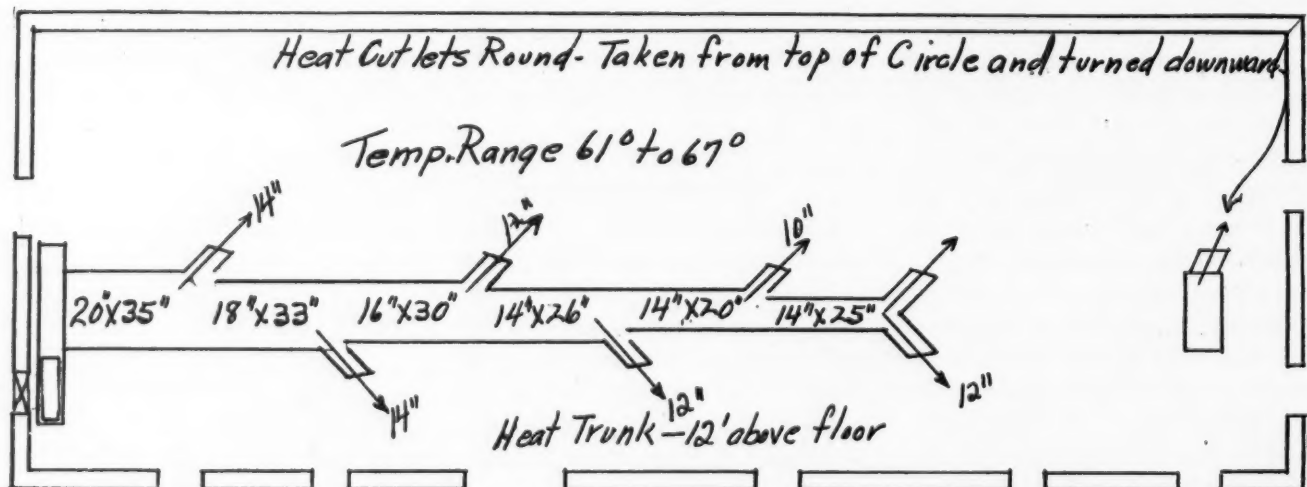
The photographs and drawings on these pages show one such installation made in Philadelphia by Benjamin F. John, who has been one of Philadelphia's leading warm air heating and sheet metal con-

The entire system consists of one trunk with stub outlets. The trunk is hung from the ceiling and decreases in area at each stub. Note how the stubs point downward to direct the air flow

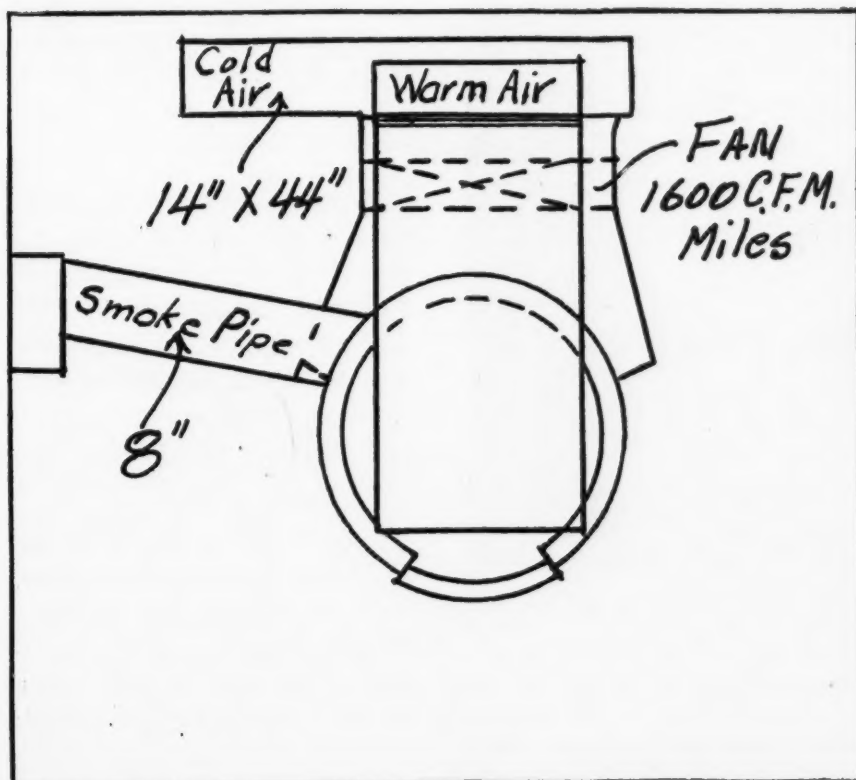


tractors for many, many years. His list of successful installations is yards long and he is even now go-

ing after commercial structure heating with renewed vigor because of added impetus given today by our



The trunk is located at the one-third point. It is closest to the wall with large infiltration. The sizes of the reductions are indicated. This practical system has proved highly economical for the garage man



Looking down on the furnace the job looks like this. All warm air is taken off through one large, flat trunk. The cold air shoe straddles the casing

present improved fans, blowers, controls and automatic heating units.

The history of this job is an insight into the troubles commonly encountered in going after this type of business. The garage building is a brick wall and wooden roof structure 80 by 20 by 16 feet in size. One wall is bricked up tight, but both ends and the other wall are pierced by numerous large doors and windows. The result of this is a large amount of infiltration in cold weather even when everything is closed up tight and the heating plant must deliver enough warm air to offset this loss.

Before the new system was put in the garage was used for "dead" storage, for the heating plant did not generate enough heat to permit the cars to be started easily on cold mornings. The old plant used steam passed around the walls through long coils. In an effort to improve the heating system the owners installed two additional steam units, but these did not greatly help the situation. Then two years ago one of the boilers

broke and shut the plant down helplessly.

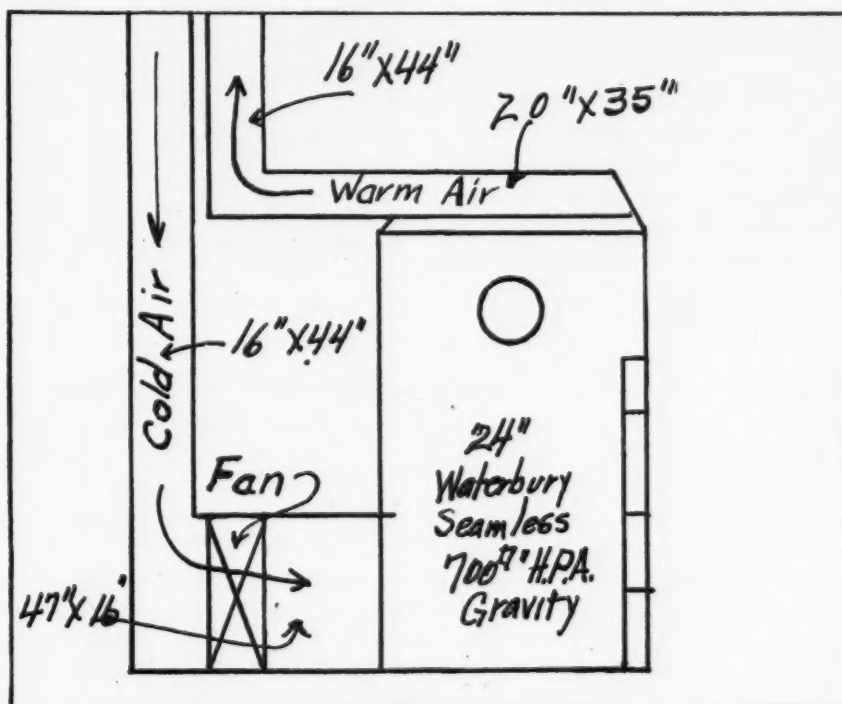
The owners decided a new system was needed. They called in both steam and warm air contractors and got their bids. The

steam bid was \$750. The present installation in which a coal burning furnace with a fan behind the flow cost \$435. This bid got the job.

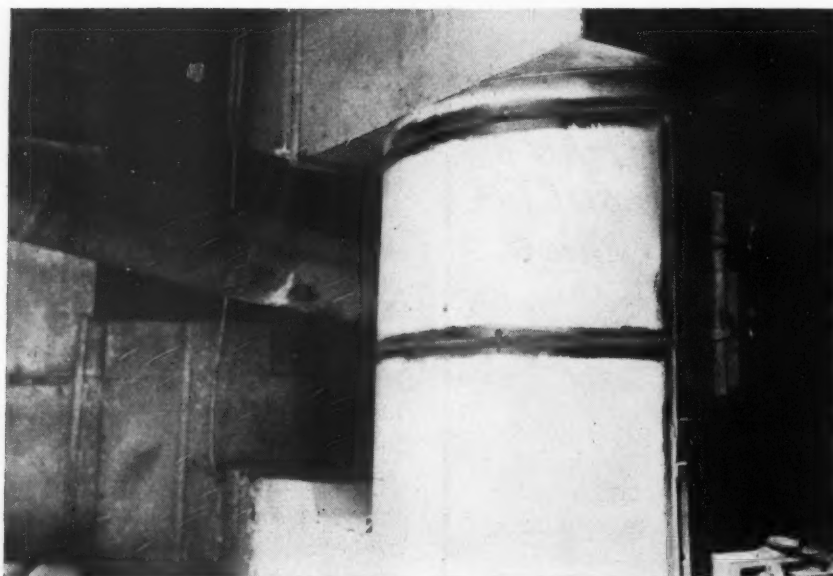
The new system is simple in the extreme. The cold air side of the plant consists of a duct connected with the fan and getting its air supply from the outside of the building through a short lead to a fresh air outlet at ground level. The unheated air is pulled through the lead and through the fan and into the furnace.

The heated air is blown out through a single flat bonnet duct up to the main trunk which is 12 feet above floor level. This main trunk is 20 by 30 inches in size at the head of the riser and reduces in size with each stub taken off. The progressive decrease in size is shown on one of the drawings.

The stubs are taken off alternately along both sides of the duct. It will be noted, however, that the main line is considerably closer to the wall having the openings than to the wall which is blank. This puts the warmed air into circulation close to the greatest movement of infiltrating air. From here its own velocity and the movement of



The warm air trunk is carried back from the bonnet and up through the floor. The cold air return is a flat duct housing a Miles fan. The fan is turned on periodically by hand



This view is not clear, but it shows the return air duct, the fan and the flat trunk coming off the top of the casing

incoming air tends to move it to the inside wall.

The stubs are all round pipes taken off the top of the circle and pointed downward at a slight angle to guide air flow toward the floor rather than toward the ceiling.

The system has been in operation for two seasons. The plant has been so satisfactory that the owners tell Mr. John that they really don't see how such a simple plant can work so efficiently.

Under the steam heating plant the garage burned up more than 15 tons of anthracite at a cost of \$225. And then the air was so cold that cars could not be started. Under the new plant only 8 tons of coal are used at a cost of \$120. This makes a saving of \$105 every year. Two years more and the plant will be paid for out of savings.

During the last two seasons the

temperature within the garage has been from 61 degrees to 67 degrees. This is just right for easy starting

and workmen can take care of the cars comfortably. The space is now in demand for "live" storage.

Mr. John says that one of the secrets of the job was that most of the plant was figured oversized. This means that the system does not have to be forced, but can be stepped up in exceptionally cold weather.

The new system has proved very easy to operate. Firing with steam has to be done many times a day. With the warm air plant this is reduced to five firings daily and the night man checks the fire and uses the fan during the night. If the fire is neglected no harm is done.

The fan is turned on five times in 24 hours and let run for 15 minutes. This is often done on a banked fire, yet the effect is instantaneous heat throughout the garage.

## A Condensed Table for Figuring Net Profit

ANY business house engaged in buying and selling units of merchandise, whether those units be a complete furnace or a section of smoke pipe, have to have some sound basis for figuring the percentage of net profit which they get from each sale.

A table for this purpose has been devised by Butler Brothers of Chicago. The table is simple in arrangement and shows at a glance just what the net profit is.

The table works like this. If your cost of doing business is 15 per cent of your gross sales and you mark a piece of merchandise to sell at 25 per cent above cost, your net profit is 5 per cent on sales. If your cost of doing business is 18 per cent and you mark your piece of merchandise to sell at 60 per cent above cost, your net profit is 19½ per cent on sales.

Here is the table Butler Brothers uses.

TABLE FOR FIGURING NET PROFITS

		If your cost of doing business figured on sales is represented by one of these figures															
And you mark your goods at one of these percentages above delivered cost.	Per Cent.....	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	25	10	9	8	7	6	5	4	3	2	1	00	1	2	3	4	5
	33.3	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	00
	40	18.6	17.6	16.6	15.6	14.6	13.6	12.6	11.6	10.6	9.6	8.6	7.6	6.6	5.6	4.6	3.6
	50	23.3	22.3	21.3	20.3	19.3	18.3	17.3	16.3	15.3	14.3	13.3	12.3	11.3	10.3	9.3	8.3
	60	27.5	26.5	25.5	24.5	23.5	22.5	21.5	20.5	19.5	18.5	17.5	16.5	15.5	14.5	13.5	12.5
	75	32.8	31.8	30.8	29.8	28.8	27.8	26.8	25.8	24.8	23.8	22.8	21.8	20.8	19.8	18.8	17.8
	100	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25

Your percentage of net profit is represented by the figure at the junction of the two columns

# Air Conditioning [Part I]

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**If you really intend to sell air conditioning heating plants, sell the housewife. She is the one air conditioning interests most. If you can "sell" her the job is 85% over. Margaret Ingels is a woman engineer. And one of the best heating engineers in the country, too. Her job is to sell air conditioning to the nation's housewives. This series will give you real ideas on how to do it.**

---

**A**RE you conscious of the air around you while reading this article on "air"?

If there is no incomplete oxidation taking place near you, nor any other poison is being generated close by, the air you are breathing has probably as much oxygen and very little more carbon dioxide than the air of the great outdoors. This is true even if you happen to be reading this magazine in a place which you consider either poorly ventilated or one having what many people erroneously term "bad" air.

As a matter of fact, before the oxygen air is reduced, or the carbon dioxide is increased so that the air is unfit for breathing, people in an enclosure have done something else to the air which causes discomfort.

The occupants of a room "heat up" the air, and this heating effect is what has given the physiologist and engineer an interesting research problem.

The findings of the physiologist can be illustrated in the language of

*By*  
**MARGARET INGELS, M.E.**  
*Carrier-Lyle Corp., Newark, N. J.*

an engineer, by likening the human body to an automobile engine. Each of us has a more delicate and more intricate mechanism than our car, but in some ways we are quite similar.

When we fuel the car and the engine is run, energy and heat are



**Margaret Ingels, M.E.**

produced; part of the energy is used up running the car and part is stored up. Part of the heat is used to keep the engine temperature at its efficiency point; and part of the heat must be carried away by the radiator water. We know the car engine must be cooled during the winter and during the summer. In fact, cooling must take place whenever fuel is burned.

Now the human body is like this because the food we eat is fuel to run our engines, and we too gener-

ate energy and heat. Some energy is used immediately and some stored up. Part of the heat maintains the body temperature at normal and the rest of the heat must be carried off, just as the automobile engine's. The air surrounding us must carry off this waste heat, and must have the capacity to do it at all times or we become uncomfortable. We too must be "cooled" during the winter as well as during the summer. In the winter the problem is not to be cooled too fast, in the summer it is to be cooled fast enough for comfort.

So the waste heat each of us dissipates "heats up" the air around us. When we become uncomfortable in a room, it is because we have heated the air around us so that it cannot carry away our waste heat. The body tries to make adjustments when in warm air such as perspiring to get more evaporation, but when adjustments are necessary we are not comfortable. The other extreme from losing heat too slowly, as in the hot room, is losing heat too fast as on cold winter days. Again the body makes adjustments, as forming goose flesh which closes the pores of the skin and makes it a better insulator, but again when it is necessary to make adjustments, we are not comfortable.

The physiologist has worked with the engineer so that now we know how much heat must be removed from the individual under various conditions and intensities of work, and the engineer can provide the air at just the right temperature, relative humidity and circulation to carry off the waste heat so that it will not only make us comfortable, but will increase our efficiency and improve our health. To provide the

*(Continued on page 40)*

# CAFETERIA PROSPERITY—

## The Only Way Coal and Furnace Men Can Meet the Public's Demand for Heating Satisfaction

**T**ODAY'S civilization is built on coal. More work is required than human labor can perform. The dominant source of muscle and brawn replacing energy is coal. We are today using twenty times as much coal per capita as we did in 1850. Coal is the most important source of energy in our modern industrial civilization, and has made our national life into a complicated network of interdependent groups with duties to each other.

One of the most profitable markets has been domestic home heating. Today these excellent markets are being threatened by newer forms of heating which, capitalizing on comfort, convenience and cleanliness of operation, are merchandising these choice and profitable customers away from the coal merchant.

What does the term merchandising really mean? Merchandising is the term applied to the active solicitation of patronage by stimulating consumers to purchase a specific product, and by formulating and executing comprehensive and consistent plans for economically and effectively distributing the product to the consumer.

Today the problem is—"How can we satisfy the consumer with our products?" The answer is—Teach the consumer how to burn coal economically, efficiently and conveniently.

For the Coal Industry, Merchandising is eighty per cent thought and study and twenty per cent action. Selling and distribution are eighty per cent action and twenty per cent thought and study.

Merchandising is considered the thought and study which goes into market analysis, the choosing of proper markets, the choosing of the proper grades and types of products to go to these markets, the

**By LORIN W. SMITH, Jr.**  
*Minneapolis-Honeywell Regulator Co.,  
At Illinois-Wisconsin Coal Convention*

study of the time in which they should go, the various elements which go into making the product, not a different product, but more appealing to these markets, the basic principle upon which the subsequent sales campaign shall be conducted, the basic principle upon which the advertising campaign shall be conducted, the broad lines of distribution, etc.

Selling is considered as being the physical contact that exists between two individuals, one as a buyer and one as a seller, whereby the ideas worked out by merchandising can be culminated in a sales contact.

Let us picture conditions of the past which are universally applicable. Suppose the home owner had some trouble with his heating plant; the fire did not burn properly or perhaps did not produce the heat expected. The home owner no doubt called the coal merchant. The usual result was that the coal merchant said the coal was all right, but the heating plant was at fault. Then the furnace man was called in to remedy the condition.

The heating man "passed the buck" back to the coal dealer by saying the furnace was all right, but that the fuel was at fault. This shifting of responsibility only too often disgusted the home owner and caused him to shift to some other form of heating.

Those days are passing and in their place we are finding a spirit of co-operation leading to co-ordination of effort between the coal

merchant and heating contractor. The coal merchant who is wide awake today is carefully studying his merchandising problems and is making a market analysis to choose the markets he is best fitted to serve. Further, he is carefully choosing the proper grades and types, as well as sizes of fuel, as they are adapted to the majority of the heating plants in his marketing territory. He is finding out also the best time of the year to make these sales and deliveries, and carefully works out his part of the economic picture of the consuming public.

Where in the past the coal retailer has not interested himself in the type of heating plant that consumes his fuel, today, we find the aggressive merchandiser making a careful survey of all heating plants in his marketing area, to determine what type and size of fuel will give the best satisfaction through proper fuel utilization. On such surveys the aggressive coal merchant employs the use of a simple draft gauge to detect faulty chimneys and flue construction. The use of a simple smoke test applied to questionable chimneys often eliminates future trouble and complaints which, incorrectly, have been attributed to the fuel used.

Instead of "passing the buck" to his fellow tradesmen, the heating contractor, the coal merchant is working with him in the mutual effort of providing modern heating comfort for the consumer. By such a co-ordinated activity many pitfalls such as antiquated heating equipment, unsatisfactory installations, improper chimneys are being eliminated instead of awaiting the product of the unsuspecting fuel

merchant.

By conducting such a survey it is readily found that the buying public—and that is your field of advancement—is now demanding modern heating comforts. People do not care particularly what kind of fuel they use so long as their desires are satisfied conveniently. Delivered heating comfort in the living quarters is the yardstick of approach. A steady, constant, and uniform heat creates an atmosphere of satisfaction on the part of the home owner which results in a confidence toward the fuel used.

Automatic heat and cleanliness, without drudgery, are what people are now taught to want, what they have been sold and they will have it.

How can the fuel merchant provide such a service and thereby obtain the continued confidence of the home owner? In the first place, to obtain the proper consumer acceptance of coal as the ideal economical fuel, the coal merchant must not consider the problem a one man job, but an undertaking which demands co-ordinated activity between all the factors and agencies necessary in providing modern heating comfort. This includes the heating contractor, the man who provides the means of burning your fuel.

There are many of your customers who, today, do not realize the economies they might effect in the proper utilization of fuel. Then, too, there are many who think that they can only get automatic control of temperature through the adoption of the newer forms of heating. Why is this so? Simply because the newer forms of heating have stressed all the advantages of comfort, convenience and even temperatures that are available with their products, to such an extent, that the home owner naturally feels that they apply only to these types of heating.

The best thing for the coal merchant to do is to inform his trade that all the comforts of automatic temperature regulation are available

for use with coal, in fact were originally developed for use with coal fired heating plants.

This will apply to the majority of the domestic heating plants, but there are a large number of coal fired heating plants, the owner of which should be educated on the use of automatic coal stokers as a means of providing greater convenience, comfort and economy.

Your fellow tradesman, the Heating Contractor, is the man to whom

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**In some communities progressive coal merchants and warm air heating men have met in joint session and brought about co-operative effort. As a result the coal man can call in a heating man when he runs into trouble. And the furnace man, too, when he knows his plant is Ok can get a fuel man out to see if a change of fuel won't remedy the trouble. The result has been consumer satisfaction.**

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you should direct your efforts in seeking his assistance in educating the consuming public to the proper utilization of coal through automatic equipment.

The objective being known, it is now up to the coal merchant to cast aside his attitude of passive merchandising and institute an active campaign of modern merchandising, having as its battle cry, "Modern Heating Comfort as it may be obtained from Coal."

The Warm Air Furnace Industry was quick to realize the opportunities; and at the semi-annual convention of the National Warm Air Heating Association a committee

was appointed to meet with a committee representing the National Coal Association.

This meeting of representative committees of the Coal and Furnace Industries, held in Philadelphia, brought out several fundamental principles on which the co-ordinated activities of the two industries could be effectively centered in.

Foremost of these principles was the recommendation of an adequate, standard chimney ordinance framed to provide proper draft conditions for fuel consumption. Furnace defects and improper firing or selection of coal were also accredited as common factors for the major burden of domestic fuel complaints.

Following close on the heels of this conference, representatives of the Furnace and Boiler Industries began appearing on the programs at coal conference. Perhaps the outstanding example of this occurred at Purdue University recently when both representatives of the National Warm Air Heating Association and the Heating and Piping Contractors National Association appeared on the program of the Midwestern Bituminous Conference.

The next development of co-ordinated activity occurred when Mr. C. B. Huntress, Executive Secretary of the National Coal Association, appeared on the program of the annual convention of the National Warm Air Heating Association in Detroit. In a Keynote address stressing co-operative sentiment from the standpoint of the coal man, Mr. Huntress commented on the recent meeting between the industries and foresaw many more meetings in the future.

He further stated that a plan of co-operative methods between the coal merchants and furnace men was being evolved. The details, however, were not dwelt on but it was obvious that by virtue of the common background and a like objective—namely, maximum heating satisfaction—joint effort, intelligently and vigorously directed would be far reaching results.

(Continued on page 60)

# FAN FUNDAMENTALS [Part II]

## With Particular Reference to the Use of Fans in Heating

By G. A. VOORHEES

Heating and Ventilating Engineer,  
Indianapolis, Ind.

Part I of this series was a discussion of the fundamental principles of fan operation. Various types of fans were referred to. In this article some of popular fallacies are exploded and some pertinent facts are established

### The Fallacy of Induced Flow

It has often been assumed that in addition to the air passing through a booster-type fan, there is also an *induced* flow created by the velocity of the air stream from the fan. Figure 6 illustrates this assumed condition with the "injector effect" of the rush air from the fan supposedly drawing around the sides of the fan, a greater volume of air than would flow by gravity.

For the past several years the writer has been testing most of the available types of furnace fans on the market in addition to a considerable number of specially built experimental fans in a wide variety of types and sizes; not one showed any "induced flow."

With each fan, first the weight of air handled by the fan alone was determined. Second, the weight of air handled by the plant with gravity circulation was measured. Third,

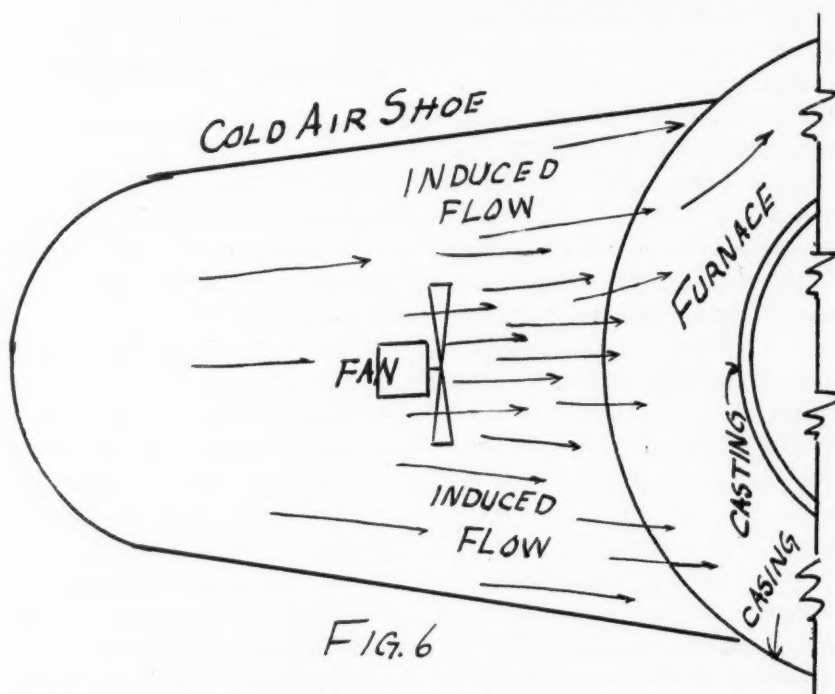


G. A. Voorhees

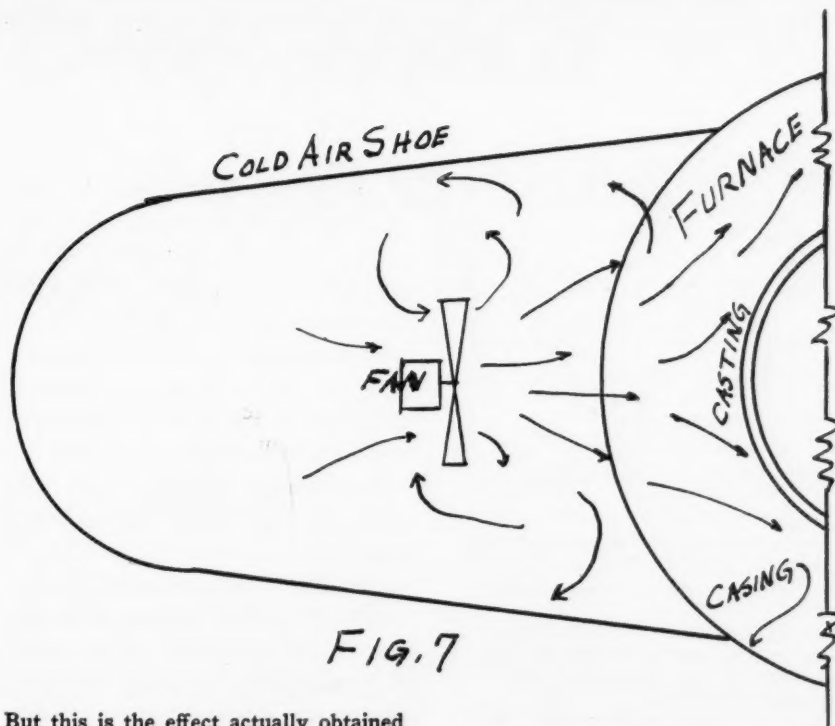
the weight of air circulated by the plant with the fan operating was obtained.

Since the tests were made with the furnace in actual operation so as to duplicate normal service conditions, if there had been an "induced flow" the plant with the fan operating would have circulated a weight of air greater than the weight flowing by gravity *plus* the weight moved by the fan itself—and this condition was never found to exist.

In practice, if a booster fan has an air handling capacity commensurate with the normal gravity capacity of the duct system with which it is used, the blast of air rushing forward from the fan, sets up tur-



This illustrates the supposed "injector" effect of a small fan in a cold air shoe. This is what the users of this equipment "hope" for



But this is the effect actually obtained by tests. Eddies around the ends of the fan blades "kill" all injector and pressure results

bulent eddy-currents which not only prevent a forward "induced flow" around the sides of the fan, but actually create a backward flow as shown in Fig. 7.

To overcome turbulence on the discharge side of the fan and thus to prevent or reduce the backward air flow, various arrangements of guide plates or baffles have been tried.

Figures 8 and 9 show the results hoped for with two of the simpler baffle plate arrangements and Figs. 10 and 11 show the results actually obtained in practice when the fan itself has sufficient capacity to make its use worth while.

#### Effect of Placing Fan Outside the Duct

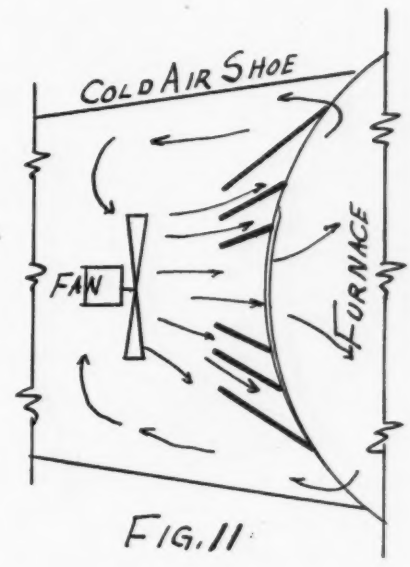
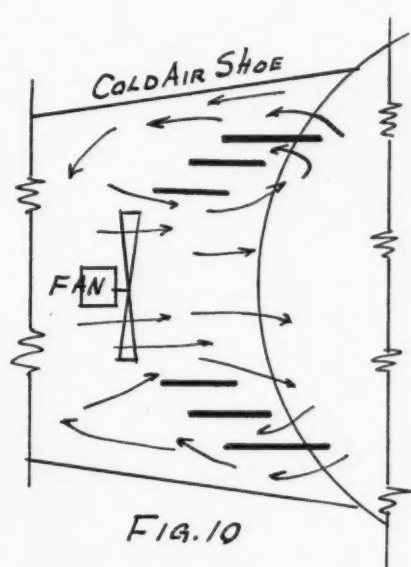
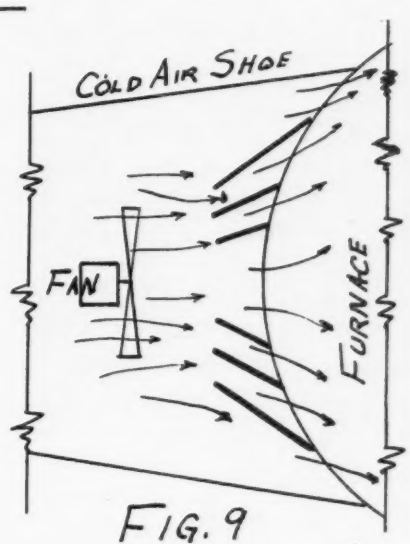
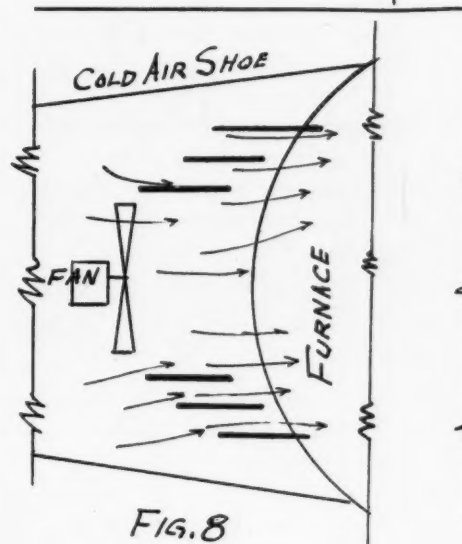
For convenience, the booster fan is sometimes housed separately with an intake and a discharge pipe joining it to the duct. This often effects a material cost reduction when

Many types of baffles have been tried to eliminate eddy. The effects hoped for are shown in Figures 8 and 9. What actually takes place within the shoe appears in Figures 10 and 11. The smaller the fan and the lower its capacity, the less successful its results

applying a fan to an existing furnace installation. It is frequently claimed for this arrangement that the rush of air from the discharge "nozzle" will produce a considerable "injector" or aspirating effect and thus accelerate the flow of the entire volume of cold air.

Figure 12 shows such an arrangement with a centrifugal or "squirrel cage" fan used as the booster and Fig. 13 shows the more common propellor type used in this way. In either case, the rush of air at "C" is supposed to draw additional air as induced currents at "A" and "B."

However, if the volume of air discharged at "C" is sufficient to be of any real value and if, because of either long, crooked or small



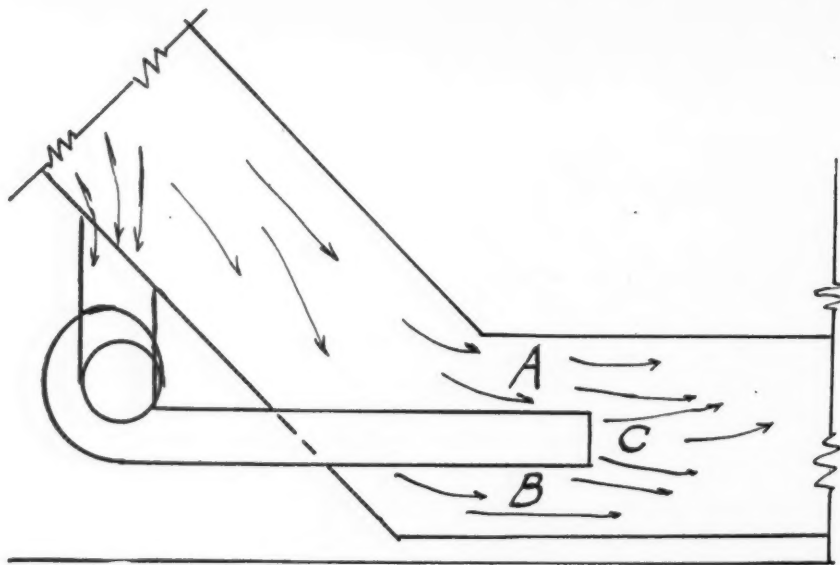


FIG. 12

Fans placed in return air by-passes are popular and in some instances successful. However, their use must be studied with regard to the system as a whole. This is what such an arrangement should do

warm air pipes, any resistance to speak of is encountered, there is at once a backing-up effect. Then a part of the air discharged at "C," instead of forcing its way ahead against the increasing resistance, will flow backward at "A" and "B" as shown in Fig. 14.

In considering the limitations of booster fan efficiency, it is important to bear in mind that: if both warm and cold air pipes are

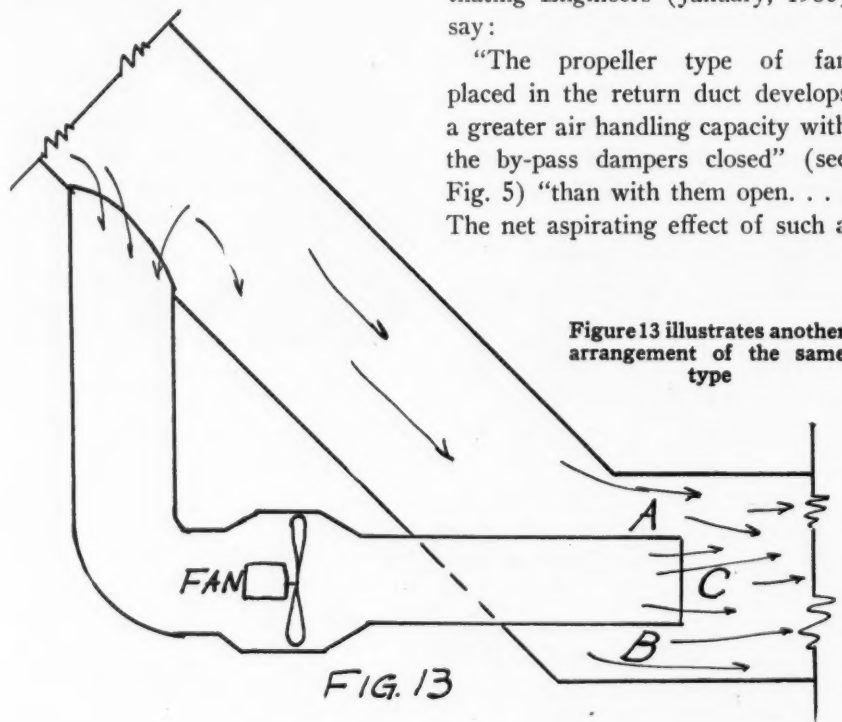


Figure 13 illustrates another arrangement of the same type

FIG. 13

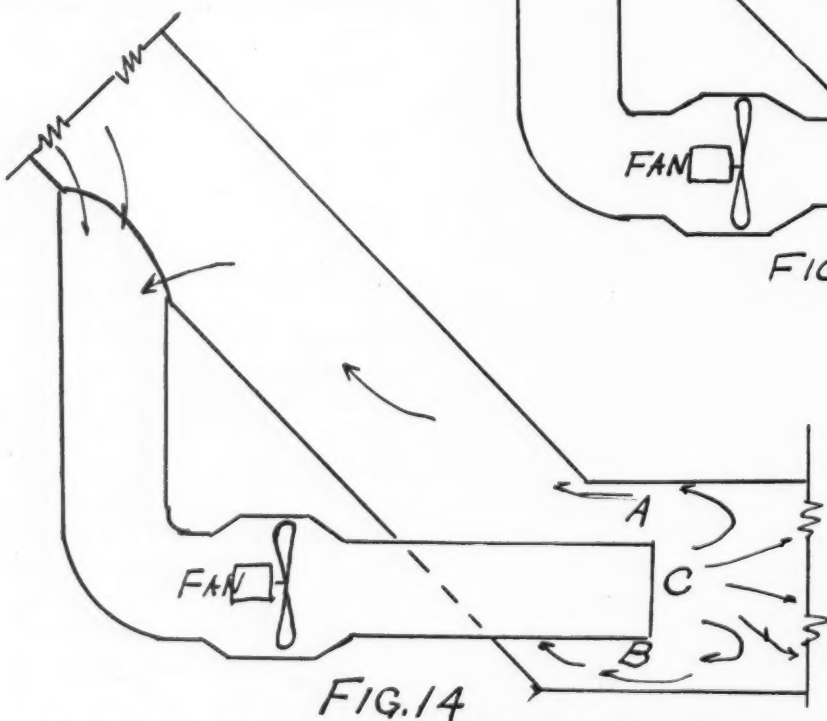


FIG. 14

What usually happens because the fan is not powerful enough or the heating system offers too much resistance is portrayed here

short, reasonably straight and of ample size, the booster fan of proper size and capacity gives good results in spite of some short-circuiting.

In any other plant where, because of length of pipe runs or other adverse conditions, a resistance to free air flow is encountered, the only alternative is to change the fan action from booster effect to pressure effect by some adequate means of positively preventing a backward flow.

Regarding the application and comparison of booster and pressure types of fans, Professors Willard and Kratz of the University of Illinois, in a paper presented at the 36th Annual Meeting of the American Society of Heating and Ventilating Engineers (January, 1930) say:

"The propeller type of fan placed in the return duct develops a greater air handling capacity with the by-pass dampers closed" (see Fig. 5) "than with them open. . . . The net aspirating effect of such a

fan in a large return duct with dampers open is of negative value since any induced flow which may occur is more than counterbalanced by the eddy currents and short-circuiting which can and does occur when there are no by-pass dampers. Such fans should therefore be installed as is generally customary with automatic by-pass dampers when placed in large return air ducts."

(Continued on page 40)

# Development of 4-Piece, 90 Degree Elbow

**I**N this week's pattern layout is shown the development of a 4-piece 90° elbow by projection of lines.

The first step in the development of this pattern is to draw the elevation or side view of the elbow as it will look when finished. In drawing this side view, make the radius of the throat equal in distance to one-half the diameter of the elbow. Then divide this side view into four parts to determine the location of mitre lines. The first part is 15°, the second 30°, the third 30°, the fourth 15°.

In shop work, the first section only would be necessary, as the entire elbow could be made from the first piece of the pattern, by simply reversing this piece and using it to mark off the other sections on your material.

From radius point O draw mitre line BJ. Next, scribe an arc equal

**By W. R. HAINES**  
*Contributing Editor*

**In the July 5 issue we showed a pattern for a 3-piece, 90-degree elbow. Here is a 4-piece, 90-degree elbow which you may want to use instead.**

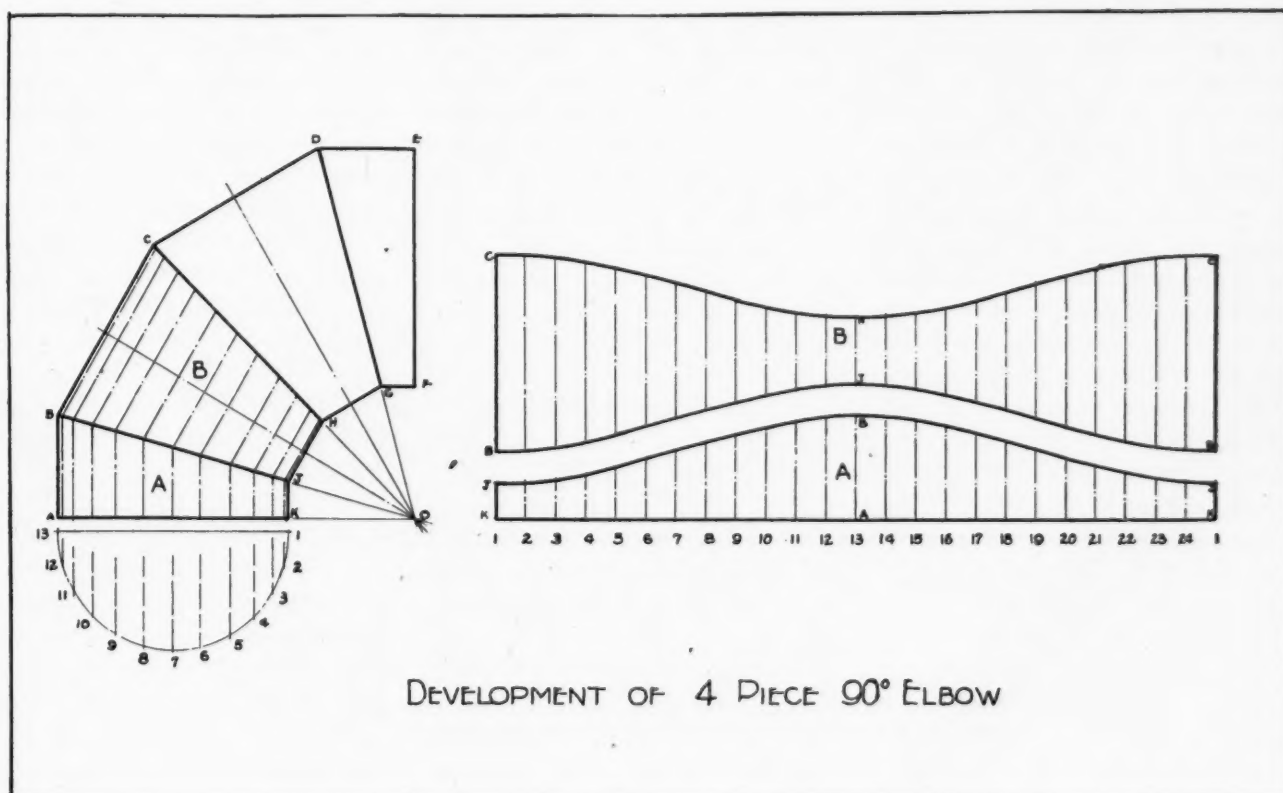
**If you use these patterns or want one worked out write us.**

stretch-out of your diameter, which is found by multiplying the diameter by 3.1416.

Divide stretch-out into equal parts, which will be twice as many spaces as in the elevation. From points 1, 2, 3, etc., on elevation, project lines to intersect points 1, 2, 3, etc., on stretch-out. When this is done, you will have view A with mitre line JBJ and circumference KAK. This is the complete pattern for the first section of the elbow. The second, third and fourth sections are determined in exactly the same manner. The seam on this elbow is in throat and heel, but can be made on side from point U if desired.

A lap-lock is shown on this development, but any lock can be used. I have found that using development of only one-half elbow pattern gives a more perfect mitre, especially on a large elbow.

in diameter to the distance between points A and K on side view. Divide this arc into twelve equal spaces, or thirteen points. Next, project points on arc to intersect mitre line BJ. Then determine



# Register Box—Rectangle to Round

**T**HE accompanying drawing illustrates a problem sometimes encountered by the sheet metal mechanic in erecting stacks, hoods, register boxes and other fittings. The method of developing this pattern is the same as it is where the round opening is centrally located, with the exception of having to obtain the true lengths of the lines in each of the four corners instead of only one.

Begin by first drawing the plan. Draw the line b-c the desired length of the rectangular opening of the register box. Next draw the two lines b-a and b-d perpendicular to the line just drawn and equal in length to the width of the rectangular opening. Connect the points *a* and *d*. Next draw the circle representing the round opening of the register box, tangent to the sides a-d and d-c. Then draw the vertical and horizontal center lines of the circle. The intersection of the horizontal center line and the side d-c locates the seam. Beginning at the seam divide each quarter of the circle into three equal parts and number each point as shown. Next connect each of these points with the corners as shown.

Now it is necessary to draw the elevation. Begin by drawing the line e-f. Next draw perpendicular lines from corners a-d, intersecting at g and h the horizontal line just drawn. Now step off from points g and h spaces equal to the width of the straight part of the register box and letter these points A and B. Connect A-B with a straight line. Draw the line C-D the desired distance from, and parallel with, the line A-B. Also draw the line E-F parallel with C-D and equal in width to the desired width of the collar. Project lines from points 1 and 7 intersecting the horizontal lines C-D and E-F. These lines complete the collar. Connect the corners A-C and B-D with straight lines. Now project lines from

**By L. F. HYATT**  
*Contributing Editor*

points 5, 4, 3, 2, in the plan. From the points of intersection between these lines and line C-D draw lines as shown, to A-B. This completes the plan and elevation of the register box.

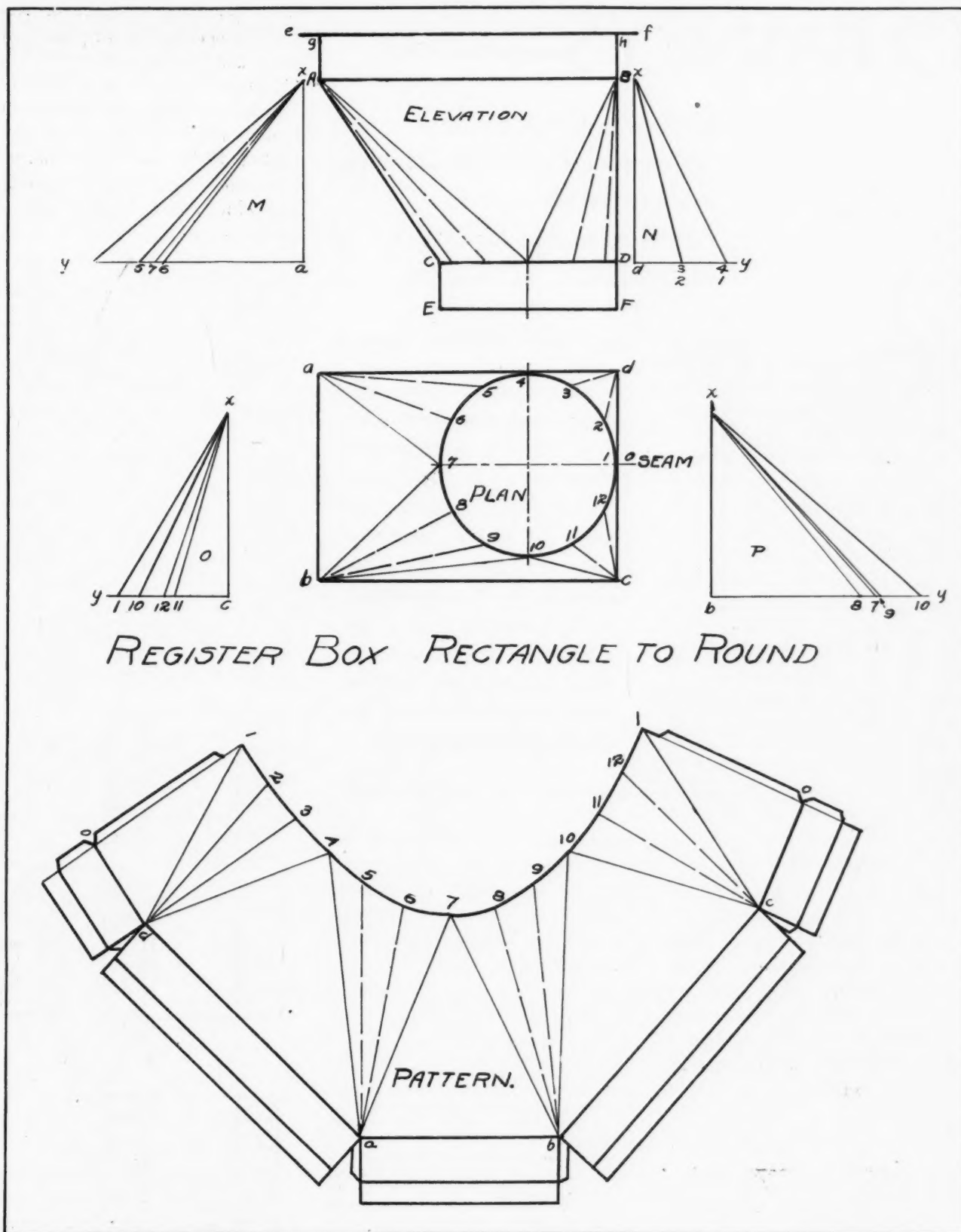
It is now necessary to find the true lengths of the four groups of lines from a-b-c-d. Draw perpendicular lines a-x and d-x either side of the elevation. Project the line A-B and C-D so as to intersect these lines. This determines the location of x in all four groups of lines. Now draw horizontal lines from the lower points a, b, c, d, making the necessary angle for finding the true length of the lines. From corner *a* of the plan take the distance *a* to 4 and using *a* as the point from which each distance is measured, locate point 4 on the horizontal line a-y and connect this point with x on the perpendicular line. Next take the distance *a* to 5. Step this distance off on line a-y and connect this point, which is numbered 4 with x as before. Continue with the other lines of corner *a* on the plan. Now from corner *b* take the distance 4-d found on the plan and step this off on the horizontal line d-y of the N diagram of lines and number the point 1. Connect this point with x. Now take the distance d-2 and step this distance off on the line d-y and connect this point with x. Continue with points 3 and 4, which in this case are the same length as 1 and 2, and number as shown.

Next on the diagram of lines O step off from point *c* the distance c-1 found on the corner c of the plan, and draw a line from this point to x on the vertical line c-x. This distance, as was before stated, was the same as the distance a-x and d-x in the M and N diagram of lines.

Now on the angle x—by the true

lengths of the lines on the remaining corner *b* of the plan should be determined. First, take the distance b to 7 on the plan and from *b* step this distance off on the line by locating point 7 and connect this point with x. The distance b-x in this case is, of course, the same as the other three, a-x, d-x, and c-x.

We are now ready to begin the development of the pattern. First draw the horizontal line a-b and on this line step off the distance a-b found on the plan, and letter the points a-b as shown. Now from the diagram M of true length lines take the distance x-7, which is the true length of the line a-7 on the plan, and with *a* on the pattern strike an arc of indefinite length. Next from the diagram of lines P take the distance x-7 which is the true length of the line b-7 found on the plan. With *b* as a center strike an arc intersecting the arc just drawn. The point of intersection locates point 7 on the pattern. Connect the points as shown. Now from diagram of lines M take the distance x-6 which is the true length of the line a-6 found on the plan. Take *a* as a center and strike an arc of indefinite length. Now set the bow pencil to the distance 7-6 found on the plan and with point 7 on the pattern as a center strike an arc intersecting the arc just drawn locating point 6 on the pattern. To locate the points through which the curved line is drawn always use this radius 7-6. Now from the diagram of lines P take the distance 8-x which is the true length of the line 8-b found on the plan, and with *b* as a center strike an arc of indefinite length, then with the bow pencil which is already set correctly strike an arc intersecting the arc already drawn locating point 8 on the pattern. Continue in the same manner with the lines found on diagram M and P, which is, of course, the true length of the lines found on the corners *a* and *b* of the plan. When



### REGISTER BOX RECTANGLE TO ROUND

the lines 4-a and 10-b of the pattern are completed take the distance a-d or b-c, which are the same, found on the plan, and with *a* and *b* on the pattern as centers strike arcs of indefinite length. Now take the distance 4-x on the diagram of lines N, and with 4 as a center

strike an arc intersecting the arc just drawn, locating point *d*. From diagram O take the distance 10-x representing 10-c and with 10 as a center strike another arc locating point *c* on the pattern. Now connect the points b-c-10 and a-d-4. Continue in the same manner with

the remaining points in the corners *c* and *d*. Now with the instruments set the distance d-o, or d-1, which represents the distance from the corner *d* to the seam, and *d* on the pattern as a center strike an arc of indefinite length. Next from the

(Continued on page 40)

# CHIMNEYS—[PART II]

## Defective Ones Cause Millions of Dollars of Damage, Endless Trouble, and Are Responsible for Much of the Failure in Heating

### Specifications for a Standard Ordinance Providing Minimum Requirements for Proper and Safe Construction of Chimneys and Fireplaces

This ordinance applies to all ordinary chimneys which form a part of building construction for use in residences, apartments, garages, and other small buildings where heaters are used for making such buildings comfortable for living purposes.

*Author's Note:* I have arranged the four types of recommended chimney construction, which follow in the order of their relative importance to safety, the safest chimney being known as Specification No. 1, and so on. After each type of construction I have gone into a detailed discussion pointing out the advantages and disadvantages of each specified chimney, giving reasons for their inclusion in this ordinance and suggesting points of workmanship and construction to be avoided.

#### Specification No. 1

This chimney (see Fig. 1-A, 1-B and 1-C) shall be constructed of special segmental or radial brick units providing a round interior flue, with a secondary wall on the outside consisting of 4 inches of hard burned brick or stone, making a total wall thickness of not less than 6 inches at its thinnest point. In the

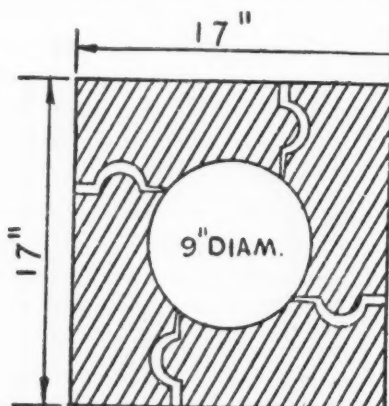


Fig. 4

In the July 5 issue we published the first section of this article on chimneys. In this second article, various aspects of good chimney construction are discussed. With municipal codes coming into popularity, every furnace man ought to know what is good or bad in chimney construction.

construction of this chimney, all brick should be laid up in accordance with specifications for such materials as issued by the American Society for Testing Materials or their equivalent.

*Author's Note:* I have designated as first preference a round flue of not less than 6 inches of masonry walls as the best type of chimney construction. It is an accepted fact that in the round flue there is very little, if any, soot collection; the elimination of the square corners removes this dangerous menace and there is no soot deposit (almost pure carbon) to catch fire; hence this type of construction presents the maximum of safety from fire. The veneer of 4 inches of brick or stone work was specified as a positive insurance against faulty workmanship and to insure the utmost in safety and efficiency. Important is the fact that the 6-inch or 8-inch wall causes less heat loss than does the 4-inch wall. The construction also allows for staggering of all mortar joints. The inside of all joints should be pointed smooth with a trowel or wiped smooth with a burlap swab.

#### Specification No. 2

This chimney will be constructed of hard burned brick or brick and

stone, providing a square or rectangular opening for the passage of gases and smoke, and having not less than 8 inches of brick work, or 4 inches of brick and 4 inches of stone work at its thinnest point. All brick and stone work to be laid up with joints staggered and in accordance with A. S. T. M. specifications or their equivalent.

*Author's Note:* In this specification I have considered only fire protection as far as the mortar joints and walls are concerned, the factors of efficiency and fuel economy not being considered. The square type of chimney with its dead air pockets in the corners and resultant down-draft is not so efficient as the circular type of construction of equal area. But with the 8-inch outer wall, the possibility of a serious fire is reduced materially. The 8 inches of solid masonry will be ample to protect the adjacent framework of the home from fire. As it is an almost certainty that a square type chimney, if not kept thoroughly clean, will eventually burn out, as the square corners are natural depositories for soot which, when dry, offers ideal material to start a chimney fire, the eight (8) inch wall thickness is needed in this type of chimney to insure safety. Let us not overlook the fact that in this specification there is always the possibility of a roof fire due to sparks being thrown out by the chimney fire caused by soot collec-

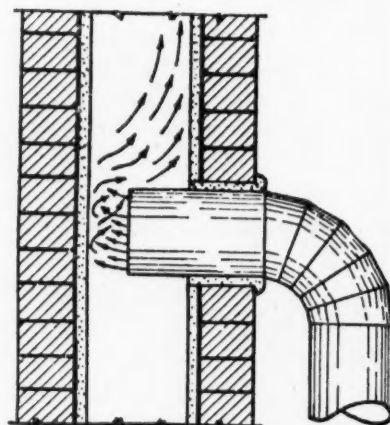


Fig. 11

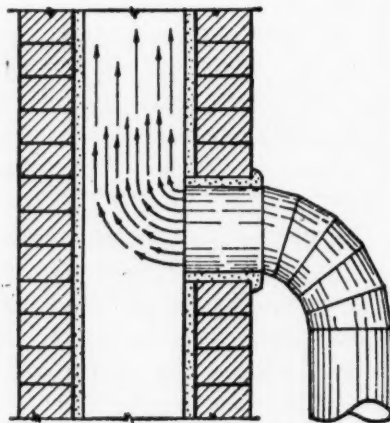


Fig. 12

tion in the corners. This construction also allows for staggering of all mortar joints. The inside of all joints should be pointed smooth with a trowel or wiped smooth with a burlap swab.

### Specification No. 3

A double round flue constructed of ordinary brick units, fire clay lining with grout and mortar.

This chimney shall be constructed of brick of standard thickness, laid in such manner as to form a wall at least 4 inches thick. This chimney to be lined with a perfectly round FIRE CLAY flue lining of a thickness not less than 1 inch, all linings to be carefully bedded one upon another in mortar, with all joints left smooth on the inside. All joints and spaces of corners between the masonry and lining shall be thoroughly slushed and grouted full of cement mortar as each course of masonry is laid. In case of two or more flues in one chimney, the flue linings shall be staggered at least 7 inches. A gas and smoke-tight with or division wall of brick and concrete, not less than 4 inches thick to separate each flue.

*Author's Note:* When flue lining is used, care must be taken to be sure that it is of good Fire Clay material. The United States Government Bulletin No. 1230 states that "in regions where the fuel is natural gas, hot flue gases are said to have caused linings to disintegrate and crumble off. In such a case it may be necessary to use a fire clay that has stood the test, or line the chimney with fire brick." Another evil of this type of construction is the ever present and important human equation of faulty workmanship. Unless the linings are placed upon a full bed of mortar and all space between the brick and flue lining thoroughly slushed with mortar, and all vertical joints in the brickwork thoroughly filled with mortar, the chimney is sure to prove inefficient and in most cases becomes a perpetual fire hazard. Figs. 5 and 6 are typical examples of the type of workmanship that is responsible for the tremendous fire loss from defective flues.

### Specification No. 4

A single round flue brick chimney with interlocking vertical mortar joints, massive construction and minimum wall thickness of 4 inches.

Flue lining should not be used on this chimney as it reduces the flue area and is subject to cracking with the possibility of falling pieces blocking the flue passages.

This chimney shall be constructed of special radial or segmental hard

TABLE I.

Steam radiation in square feet.	Hot water	Warm air furnace required capacity in square inch lead- er pipes	Approximate number of rooms to be heated 70° F. outside	Theoretical chimney flue area required, square inches.	RECTANGULAR FLUES—MINIMUM FLUE AREA.				ROUND FLUES.				FIREPLACES.			
					Unlined Flues.	Flues with Fire Clay Linings.	Unlined Flues.	Flues with Fire Clay Linings.	Unlined Flues.	Flues with Fire Clay Linings.	Unlined Flues.	Flues with Fire Clay Linings.	Rectangular Flues.	Round Flues.	Rectangular Flues.	Round Flues.
Commercial size inside	Actual size inside	Actual size inside	Actual area inside	Effective area inside	Commercial size chimney	Inside dimension of lin- ings.	Actual area inside	Effective area inside	Commercial size inside	Diameter of flue inside	Effective area inside	Actual area of lining inside.	Flue area required— square inch.	Flue size required.	Flue lining required.	Diameter of flue inside.
8x8	8 1/4x8 3/4	72	56	49	8x8	7 1/4x7 1/4	52.56	49	8	8	50	50	27x30"	27x30	7 x 11 1/2	9"
8x8	8 1/4x8 3/4	72	56	49	8x8	7 1/4x7 1/4	52.56	49	8	8	50	50	27x36"	27x36	7 x 11 1/2	10"
8x8	8 1/4x8 3/4	72	56	49	8x8	7 1/4x7 1/4	52.56	49	8	8	50	50	30x36"	30x36	7 x 11 1/2	11"
8x12	8 1/2x11 1/2	110.5	86	70	8x12	7 x 11 1/2	80.5	70	9	9	63	63	36x36"	36x36	11 1/4x11 1/4	12"
8x12	8 1/2x11 1/2	110.5	86	70	8x12	7 x 11 1/2	80.5	70	9	9	63	63	42x36"	42x36	11 1/4x11 1/4	13"
12x12	12 x 13	169	132	123	12x12	11 1/4x11 1/4	126.5	123	10	10	78	78	48x36"	48x36	11 1/4x16 1/4	14"
12x12	12 x 13	169	132	123	12x12	11 1/4x11 1/4	126.5	123	12	12	113	113	.....	.....	.....	.....
12x16	12 x 18	234	182.5	157	12x16	11 1/4x16 1/4	183	157	13	13	133	133	.....	.....	.....	.....
12x16	12 x 18	234	182.5	157	12x16	11 1/4x16 1/4	183	157	13	13	133	133	.....	.....	.....	.....

NOTE—Minimum height of flue for one-story bungalows 25 feet from grate of heater to top of flue.  
Minimum height of flue for two-story dwellings 35 feet from grate of heater to top of flue.

\*Actual less 22%.

\*\*Full area allowed effective due to smooth interior surface of linings, on square chimneys with deduction for corners only.  
\*\*\*13% greater efficiency in round flues allowed on account of less surface resistance to products of combustion.

SPECIAL NOTE—Lack in cross-sectional area from the theoretical in round flues is offset because of more perfect draft action as found in actual practice.

burned brick units, providing a circular opening for the passage of gases and smoke, having a wall thickness of not less than 4 inches at its thinnest point. Masonry work to be in accordance with A. S. T. M. Specifications or their equivalent.

*Author's Note:* For all ordinary conditions this type of chimney construction should be considered as satisfactory, as the round flue offers less resistance to the passage or flow of smoke and gases, and the elimination of square corners reduces the liability of soot collection. This type of construction has been included because it is the only material that has a positive interlocking vertical mortar joint; said joint measuring at least  $5\frac{1}{2}$  inches. This interlocking joint overcomes the evil of past construction because it locks the mortar into the joint permanently. Mortar is known to work out of the straight vertical joints when standard brick is used which often lets fire creep directly through these open joints, into the walls of the home. This construction also allows for staggering of all mortar joints. The inside of all joints should be pointed smooth with a trowel or wiped smooth with a burlap swath.

A common practice is to build the outer shell of brick work up several feet and then drop the lining in place. No attempt is made to seal the joints in the flue lining with mortar, and the result is leaky chimneys, poor draft, and a possibility of soot finding its way through cracks and paving the way for a disastrous chimney fire.

In some cases when a chimney is built under rigid inspection the space between the lining and brick work is slushed with mortar. Due to expansion and contraction which are the results of high temperatures in the stack (sometimes as high as 1,200 degrees) this lining is liable to crack and spall off on the inside, thus clogging the chimney and dangerous fires may result. Also the ever present menace of furnace gas is likely to appear with fatal results.

In my investigation it has come to my notice that in a great majority of cases, chimneys are constructed of inadequate size for the work they are supposed to do. It is my belief that no chimney less than full 8-inch inside diameter should be used in conjunction with the central heating plant. In the table of minimum flue

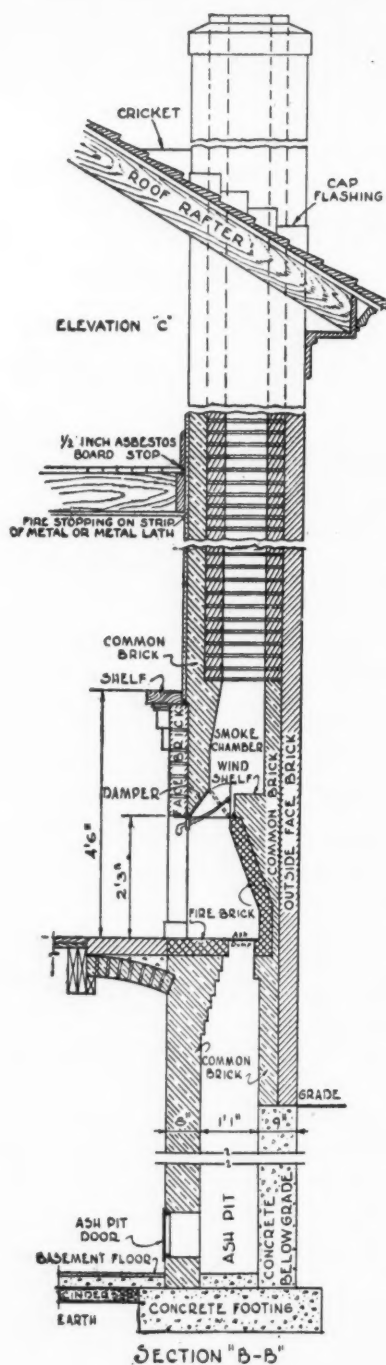


Fig. 13

areas, shown on page 35, I have given full information on this subject.

#### Mortar for Chimney Construction

The mortar for chimney construction recommended by the National Board of Fire Underwriters specifies that:

"All mortar used in chimney construction, except as specified for fire brick . . . . . shall be Portland Cement mortar proportioned as follows: Two bags of Portland Cement, not less than 188 pounds, and

one bag of Dry hydrated lime, 50 pounds thoroughly mixed dry. To this mixture shall be added three times its volume of clean, sharp sand with sufficient water to produce proper consistency. When dry hydrated lime is not available, 1 cubic foot of completely slacked lime putty may be substituted for 50 pounds of dry hydrate. In case of such substitution, the mixing of lime and cement shall be very thorough. Dry hydrate should always be used in preference to lime putty. Fire brick used for the lining of flues or facing the interior of fireplaces shall be laid in fire clay mortar.

Chimneys shall be built upon concrete or solid masonry foundation properly proportioned to carry the weight imposed without danger of settlement or cracking. The footing for an exterior chimney shall start below the frost line.

Chimneys in frame buildings shall always be built from the ground up, to rest on masonry basement or foundation walls. Chimneys shall not rest upon or be carried by wooden floors, beams or brackets, nor be hung or supported by metal stirrups from wooden construction.

The total offset, overhang or corbel of an independent chimney shall not exceed three-eighths the width of the chimney in the direction of the offset. It is important that flues be constructed as nearly vertical as possible since each offset retards the draft and offers a lodging place for the accumulation of soot, thereby reducing the efficiency and increasing the fire hazard. When the direction of a flue must change, it should preferably not depart more than 30 degrees from the vertical.

Corbelled chimneys shall not be supported by hollow walls or walls of hollow units. Solid walls supporting corbelled chimneys shall be not less than 12 inches thick, and corbelling shall not project more than 1 inch per course or not more than 6 inches in any case.

When flue lining is used in a corbelled chimney, the linings must be cut so as to fit perfectly tight at the

points where the chimney is corbelled over and all joints must be thoroughly slushed in with mortar to prevent every possibility of leakage.

Connections between chimney and roof shall be made with metal cap and base flashing (copper recom-

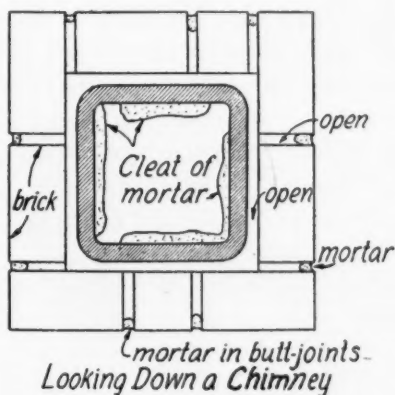


Fig. 5

mended as best material) arranged to allow for any vertical or lateral movement between chimney and roof.

#### Height of Chimney

The top of the chimney should extend at least 3 feet above flat roofs and 2 feet above the ridge of peak roofs (see Fig. 9) and it should not be on the side of the house adjacent to a large tree or a structure higher than itself (see Fig. 10), for these may cause eddies and force air down the chimney.

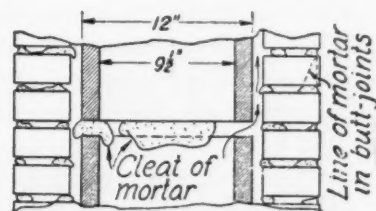
No increase of chimney wall thickness, nor any projecting masonry, or set back, shall be permitted within a distance of 6 inches above or below the rafters or roof joists.

There shall be but one connection to a flue irrespective of whether the fuel used be coal, coke, wood or oil.

Smoke pipes shall enter the side of chimneys through a fire clay or metal thimble or flue-ring of masonry. The top of the smoke-pipe intake shall be set not less than 18 inches below sheet metal ceilings, wood lath and plaster or exposed wooden joists. Neither the intake pipe nor thimble shall project into the flue. No woodwork shall project into the flue. No woodwork shall

be placed within 6 inches of the thimble. When a smokepipe enters a chimney breast through a studded-off combustible partition, the thimble shall be kept 6 inches clear of all woodwork and be surrounded by metal lath and plaster.

All flues to which ranges, heating furnaces, boilers, automatic gas water heaters or fireplaces are to be connected shall be subjected to a smoke test before acceptance, but the test shall not be made until mortar is thoroughly seasoned. The method of test is to build a smudge fire at the bottom of the flue and while the smoke is flowing freely from the flue, close it tightly at the top. Escape of smoke into other flues or through the chimney walls indicates openings that shall be made tight before the chimney is



Vertical Section of Typical Flue

Fig. 6

accepted. The test shall be made by the mason contractor in the presence of the building inspector or other official having jurisdiction, the heating contractor and of the owner or his representative.

#### Woodwork Around Chimneys

No wooden beams, joists, rafters or studs shall be placed within 2 inches of chimney walls, whether the same be for smoke, air or other purpose. No woodwork shall be placed within 4 inches of the back wall of any fireplace.

All spaces between chimneys and all tiers of wooden joists or beams shall be filled with loose crushed cinders or mortar refuse, gypsum block or other porous incombustible material to form a fire stop.

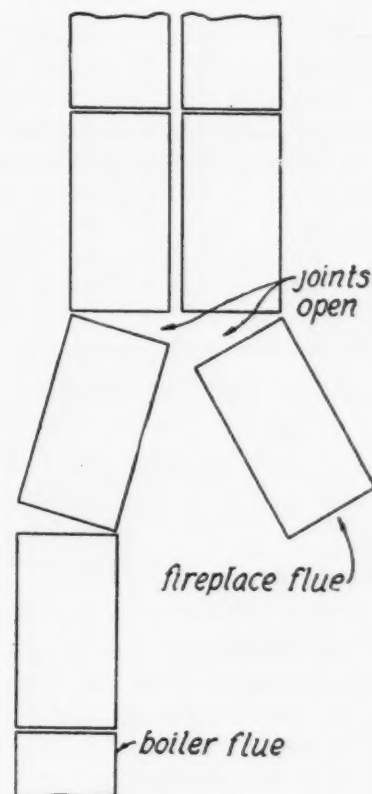
The incombustible material shall be supported by strips of sheet metal or metal lath set into the brickwork or nailed to the wooden beams,

forming a buckled, flexible joint close to the inner edge of the chimney.

No wooden studding, furring, lathing, plaster grounds or plugging shall be placed directly on any chimney or in its joints. Wooden construction shall either be studded off from the chimney, or the plastering shall be directly on the masonry, or on metal lathing, or on incombustible furring material. Wood placed around chimneys to support base or other trim shall be insulated from the masonry by asbestos paper, at least  $\frac{1}{8}$  inch thick, and metal wall plugs or approved incombustible nailholding devices in the joints shall be used for nailing. (See Fig. 13.)

#### Fireplace Construction

Fireplace walls shall not be less than 8 inches thick, and if built of stone not less than 12 inches thick. The faces of all such minimum thickness walls exposed to fire shall be lined with firebrick, soap stone, cast iron, or other suitable fire re-



Elevation of the two tile flue linings in the house described

Fig. 7

sistive material. When lined with 4 inches of firebrick, such lining may be included in the required minimum thickness.

All fireplaces and chimney breasts shall have trimmer arches or other

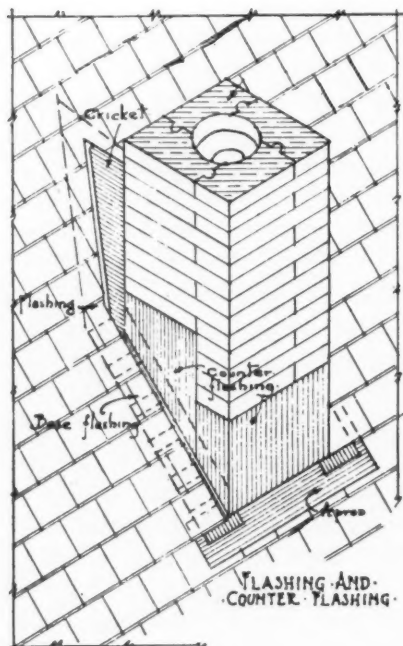


Fig. 8

approved fire-resistive construction supporting hearths. The arches and hearths shall be not less than 20 inches wide measured from the face of the chimney breast, and not less

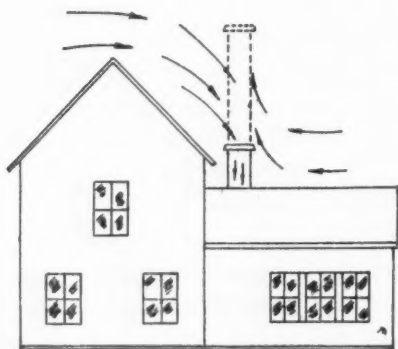


Fig. 9

than 12 inches wider than the fireplace opening on either side. The arches shall be of brick, stone or hollow tile, not less than 4 inches thick. A flat stone or a reinforced concrete slab may be used to carry the hearth instead of an arch if it be properly supported and a suitable fill be provided between it and the hearth. Hearths shall be of brick,

stone, tile or concrete as may be specified. Wood centering under a trimmer arch shall be removed after the masonry has thoroughly set.

The inside area of the fireplace flue shall not be less than one-twelfth the area of the fireplace opening if round flues are used, in case of square or rectangular flues, the inside area of the flue shall not be less than one-tenth the area of the fireplace opening.

#### Plan Frame House

No wooden mantel or other woodwork shall be placed within 8 inches of the jambs or within 12 inches of the top of the arch of any fireplace opening. No combustible summer piece or fireboard shall be used.

Any person or persons, whether owner, builder or mechanic, who shall build a chimney or flue in violation of any requirement of this ordinance shall be deemed guilty of a misdemeanor and shall be fined not less than \$25.00 nor more than \$... for each offence and any chimney or flue which is built in violation of any requirement of this ordinance shall be immediately demolished or rebuilt. It shall be the duty of the Building Inspector or other duly authorized official to enforce this ordinance.

All ordinances or parts of ordinances in conflict with this ordinance are hereby repealed.

This ordinance shall take effect upon being approved by the .....

#### Conclusion

The above specifications, together with the preceding report of our investigation are offered in a sincere desire to eliminate the terrific loss in lives and property that is daily occurring in America due to the past use of inefficient chimney materials and due to the past use of inefficient



Fig. 10

chimney construction work. Every architect and builder is earnestly requested to make it mandatory on themselves and on everyone with whom they come in contact, including the home owner, to see that proper materials and proper construction is used in the building of this most vital part of the home. To all building officials, fire marshals, architects, contractors, builders, heating contractors and home owners, therefore, this work is respectfully submitted for your most earnest consideration.



**Do you know you can sell painted copper to architects by simply explaining how it eliminates yearly painting and maintenance? Next issue tells how one firm does this consistently. Look for the story.**

# How Many of You Fellows Get Letters Like These?

**J**UST how senseless some folks can be is always amazing, but often forgotten. This is particularly so when they want contractors to give them a bid on a job.

Folks really must think we contractors are mind readers.

And are they impatient when we can't immediately show them a completed job and at a price which makes us owe them money.

We can illustrate this by some letters sent to the Ray Wright Sheet Metal & Tile Works of Jackson, Miss. Here's the letters. Tell us how these compare with some of yours.

-----  
Ray Wright, Jackson, Miss.

Dear Sir:

Please name price at which you will supply the following items for our new brick store at Terry, Miss.

Please name price separately on four 18 inch roof ventilators, on 2 scupper outlets and 2 conductor heads with two 5 inch conductor pipes to reach to the ground a distance of about 17 feet.

It is our intention to bring the water from the front half of the building down inside the building through a single pipe which should be at least 7 inches in diameter and we should have for connecting this pipe with the valley a fitting shaped somewhat like a funnel about 10 or 12 inches in diameter at the top with stem to go inside the conductor pipe. The upper portion of this funnel to have flange for attaching it securely to the valley. As a precaution against accidents or terrific downpours of rain it is my intention to place through the front wall, 15 inches, a piece of round galvanized pipe 8 inches in diameter fitted at the outer end with a door hinged

at the top so that when the water goes through it it will raise this little door and when the water is not flowing through it the door will naturally hang down and close the opening and it might be better to make this square say 6 x 8 inches. It would then take the place of two brick in the wall.

One 6 x 8 foot single pitch skylight, we to supply the 1/4 inch ribbed wire glass ourselves, but you to do the glazing on the job, if you do the other tin work. It may be well to make the price for the skylight only not including the installation of it. We could glaze it without you, if you did not have any other work on the building when the skylight was required.

All of the above to be made of Armco or Toncan metal galvanized, 23 gauge, although that down pipe through the inside of the building and the funnel would preferably be made of 26 gauge. In fact I would really prefer all of this material made of 26 gauge if you have it as the cost of the material will only be a little more, should certainly be stronger and more durable.

Please advise what the exact size of the lights for the skylight should be and how many of them will be required.

With reference to the roofing proposition state that I am still inclined to furnish the materials ourselves and shall thank you to advise me how much you will charge per square for applying the roofing and also how much for applying the flashing. You could cut the iron for the flashing at your shop and if you wish to shape it there that could also be done in your shop. We could ship you the required amount of iron for the flashing.

Please advise how much per square for applying the Asbestos class "A," also for applying the regular style using regular saturated felts, three plies of felt and three coats of Asbestos cement.

Please let us hear from you promptly in reply hereto as we hope very soon to be in shape for the roofing at which time we shall also be in need of these gutter heads, skylights, etc., and ventilators.

I was about to overlook to state that the gutter heads and the opening to the funnel should have a covering of half inch hardware cloth, which we can supply. Those on the conductor heads should be hinged so that they could be opened or closed at will, while that on the roof should perhaps be either attached or it could be arranged so that it could be hinged or slipped in and out of fastenings in the valley. Of course the object for this hardware cloth is to keep out trash, birds, etc.

Yours truly,  
Blank & Blank Co.

-----  
To this the Wright company replied as follows.

-----  
Blank & Blank Co.  
Gentlemen:

This will acknowledge receipt of your letter of the 20th instant, and we hastened to reply stating that under the conditions and specifications, we could not give you any figure, whatsoever, on the work you require on store building which you are having erected at Terry, Miss.

Thanking you for your inquiry, we are,

Very truly yours,  
Ray Wright.

To which the customer answered immediately:

-----  
Mr. Ray Wright, Jackson, Miss.  
Dear Sir:

We shall thank you to very promptly submit prices at which you will supply the following items to be made of 26 gauge American Ingot Iron:

SQUARE conductor pipe, 4 x 4 and 4 x 5, preferably in 10 foot lengths.

Offset Ls for the above, one end 24 inches and the other end 30 inches, with slanting connection between to make offset 2 inches, these being to bring the conductor pipe to a stone base which projects 2 inches beyond the brick wall above it. The connecting pipe between these two ends to be slanting, preferably at a sharper angle than 45 degrees, say about  $22\frac{1}{2}$  degrees. Two of these offset Ls should offset 3 inches, as indicated in diagram below, as these are to go down an inside corner.

There will be altogether about 120 lineal feet of the pipe and Ls.

Please advise how promptly you can make these up; also what you have with which this pipe may be secured to the brick wall in a neat manner that will look well.

What are the widest sheets of about 24 gauge steel sheets, plain or galvanized, you carry in stock and in what length. It is just possible we may wish you to construct some forms if you have this material in 48 inch widths.

Yours truly,  
Blank & Blank Co.

-----  
The Wright company attached a postscript to this letter explaining that they could not figure such a job without seeing it. To this note came the following reply:

-----  
Mr. Ray Wright, Jackson, Miss.  
Dear Sir:

We herewith return to you our letter of 24 ult. which has just been received from you with the

notation that you do not know what we want. We regret that you did not reply more promptly and shall thank you to reply promptly to this letter.

On the back of our former letter we have made an outline of a brick wall set up on a contract base which projects 2 inches beyond the brick work, which we trust will enable you to understand what we do want.

The pipe starts at the bottom of the gutter that runs along the edge of the roof, and proceeds through the cornice down the side of the wall a little more than 20 feet. We figure on using 2 pieces of 10 foot conductor pipe for this and then by making a long end, say 24 inches to the upper part of the offset-Ell,

to provide for the extra length required, and by making a 6 inch end for the lower part of the offset Ell to provide for variations in the height required below the offset.

It is desired to avoid the use of a square Ell by making the angles 45 degrees or less, as indicated in the rough sketch.

We shall require about 120 lineal feet, including Ells. While we prefer this made of 26 ga. American Ingot Iron, yet we may use a different gauge or even regular sheet steel if you have not the American Ingot.

Please also quote price for pipe hooks for securing this square pipe to the brick wall.

Yours truly,  
Blank & Blank Co.

### A REGISTER BOX

(Continued from page 33)

plan take the distance B-D as a radius and 1 on the pattern as a center and strike an arc intersecting the arc just drawn locating o. Connect these points. Then take the distance c-o found on the plan and with c on the pattern as a center strike an arc of indefinite length and with the distance B-D again as a radius, with 1 as a center, strike an arc intersecting the arc just drawn, locating o. Connect these points and draw the curved line through points 1, 2, 3, 4, etc. Next draw lines at right angles to the lines o-d, d-a, a-b, b-c, and c-o and on each of these lines step off first distance B-h and then h-f and draw lines parallel with o-d, d-a, etc., connecting the points just stepped off. Add the laps and seams. Complete the patterns by drawing one for the collar.

### COST ACCOUNTING

(Continued from page 21)

understand these remarks, or wish specific information concerning any transaction, please write us and we will be very glad to write you direct. If your query is such that the readers of the ARTISAN would be interested, we can also cover the matter in print.

If you have followed this series

of articles on Cost Accounting for the Warm Air Furnace Installer, you should by now have a more thorough idea of the subject. In the next article we will present for your information a draft of a balance sheet and an Operating Statement. These two reports are such as may be prepared from a set of books such as has been covered by these articles.

### AIR CONDITIONING

(Continued from page 25)

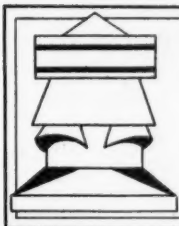
right kind of air for such purposes and for many other purposes, engineers have studied the physics of air and developed means of creating and controlling atmospheric conditions suited to any particular purpose. In effect, weather is manufactured to order, or the air is conditioned.

The more definite application of air conditioning will be treated in a subsequent article in this series.

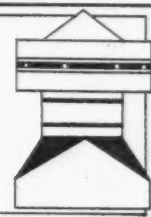
### FAN FUNDAMENTALS

(Continued from page 30)

While the above statement refers specifically to the fan placed within the duct, it is obvious that a similar condition exists when the fan unit is separately housed (Figs. 12, 13 and 14).



# GRAVITY EXHAUST VENTILATION



## Apartment Building Ventilation

I HAVE been called in recently on quite a few apartment ventilation problems and as this is evidently a subject of interest at this time of year to those who live in apartments and to those who own them, it will doubtless be of interest to any sheet metal contractor who is on the lookout for profitable business.

When we speak of apartment ventilation at this time of the year we really mean apartment cooling. When we speak of apartment ventilation in the winter we mean ventilation for the purpose of getting rid of undesirable fumes and odors.

Apartment ventilation carries four different phases, namely, kitchen ventilation, bathroom ventilation, corridor ventilation and roof space ventilation. Kitchen and bathroom ventilation are not acute conditions at this time of year because doors and windows are in the main kept wide open and cooking is at the minimum. Corridor ventilation is only nominally acute, but roof space ventilation assumes an importance that overshadows anything else in apartment ventilation at any time of the year. This is due to the fact that apartment cooling is dependent entirely on proper handling of roof space ventilation. The cooling comes at night when the outside air is some degrees lower in temperature than during the day.

A proper system of ventilation which will withdraw the heated air and replace it with a constant flow of cool night air will cool the apartment off so that it will start the following day with a big advantage in reduced temperature. Of course

By **PAUL R. JORDAN**

*The Paul R. Jordan Company  
Indianapolis, Ind.*

exhausting hot air does not cool any building. It is the introduction of cool air that does the cooling, but if you merely mix hot air and cool air you are only doing a 50 per cent job, whereas if you withdraw the hot air and replace it with cool air

stale odors, which are the most objectionable element; and as a cooling proposition exhausting air from corridors is most practical.

The corridors on the different floors of an apartment are connected by stairways so that an exhausting arrangement from the corridors of the top floor will take care of this. It is always the top floor which needs ventilation most any-

**Buildings like this can nicely use gravity ventilation especially for their upper floors and halls. When these buildings are being remodeled the ventilation salesman can well afford to talk to the owner or architect**



and continually keep up this process of withdrawing the hot air as fast as it absorbs the building heat, you are operating with 100 per cent efficiency.

Corridor ventilation should go hand in hand with roof space ventilation and can be so handled at practically no additional expense. Corridor ventilation is practically always exhaust ventilation, as a supply of fresh air will come from all directions. While some of this air may be laden with cooking odors, the mere air change in corridors will serve to eliminate any

how, as it is the hottest place. A good arrangement which usually works out in conformity with the construction is to arrange for an exhaust from the upper corridor into the roof space and exhaust from the roof space out through ventilators. Exhaust from the upper corridors into the roof space is usually already provided for by hatches or trap doors put there for the purpose of getting up on the roof. The opening from the corridor into the roof space should be left open. The opening from the roof space onto the roof should be

closed. If both openings are left open then the air from the corridor will short cut directly through the roof space without ventilating it.

It is necessary that the roof space should be swept in every corner with circulating air. The hatches are usually about the center of the roof space so that a ventilator placed at each of the four corners of the roof, opening directly into the roof space, in conjunction with the opening from the corridor, will give a very good roof space ventilation. If openings from the corridor are not in approximately the center, then the exhausts from the roof space must be worked out in consideration with the corridor openings so as to not leave any dead air pockets in the roof space.

All openings into the roof space should be closed. Many apartments have so-called roof space ventilation with louvres in the walls on opposite sides of the building. This type of roof space ventilation is insufficient and unsatisfactory.

In figuring capacities multiply your roof area in square feet by 80, which will give you the number of cubic feet to be drawn through the roof space. On roof spaces 5 feet or less in height rotary ventilators should always be used on account of the frictional interference. On roof spaces 5 feet or more in height the storm band type of ventilator may sometimes be used where all conditions are favorable, but the safest and best plan is to use a rotary ventilator on all roof space ventilation. Your ventilator manufacturer will help you in making ventilator layouts.

Tenants in top floor apartments are suffering from heat, especially at night. Apartment owners are finding their upper floors 50 to 75 per cent unoccupied. All of this can be eliminated by a well planned simple system of ventilation installed by a sheet metal contractor. If the sheet metal contractor lets it be known that he holds the solution to the problem, he will find new fields opened to him.

## Good Ventilation Practice

THE subject of ventilation is very much in the public eye today. Commercial houses, such as the theatres, have capitalized on this public interest and use summer and winter ventilation as a part of their publicity campaigns.

Correctly ventilated areas can only be assured when the engineer and the contractor understand and consider every factor which may effect a system of air movement.

One of the fundamental principles is that of vitiation of air. In plain language, the process by which air becomes "foul."

In public gathering places there are several conditions which cause this "fouling" of the air. The human breath as it issues from the lungs has been robbed of its correct proportion of oxygen, the oxygen being replaced by carbon dioxide. Humans throw off heat, too, and this raises the temperature. It has been proved that a person suffers less effects from deviated air when temperatures are kept low than when temperatures go up. Odors are another thing which every public gathering place seeks to avoid.

What we call pure air contains three to four parts of carbon dioxide per 10,000 units. When this percentage is increased to six or seven parts per 10,000 the effect is still hardly noticeable. When the percentage increases, however, to eleven to twelve parts per 10,000 we complain that the air is "stuffy" or oppressive.

Few authorities care to draw a line between just what is "pure" air and that which is "oppressive." The same holds true with regard to what is "good" and what is "bad" ventilation.

One reason for this is that the definition is more or less a personal proposition. What seems good ventilation to one person is not good to another.

The contractor who is doing ventilation work should always bear in

mind that body odors and heat generated by human beings always make the air within a room hot and stuffy. The only way to overcome this is to change the air frequently and bring in large volumes of fresh or renewed air.

At the same time the contractor should remember that the physical construction of any room has much to do with the feelings of the occupants regarding the air. A high ceilinged room will permit an easier movement of air and with the same floor area and the same number of occupants seem "fresh" for a longer period than a low ceilinged room where air movement is confined.

In a school the children sit in fairly close proximity. They remain within a room for several hours a day. They are active physically and in proportion to size are greater generators of heat than a still-sitting adult. At the same time the room is usually low-ceilinged. This necessitates moving large volumes of air at numerous hourly changes all during the day.

A church, on the other hand, is almost exactly opposite. Usually the room is high ceilinged and large in proportion to the number of occupants using it. In addition, it is used for only a short period and only at long periods of time. Excepting under unusual circumstances the air which is contained within the room remains fresh without induced air movement for almost the length of time the room is in use.

These buildings require less elaborate ventilation systems than schools. But it should be remembered that the physical structure of the church is such that a carefully worked out system has to be designed or the desired effect will be lost. Air movement within a church has to be studied carefully or the physical characteristics will counterbalance the ventilation system.

# RANDOM NOTES AND SKETCHES

Remember that prize 14 carat gold banded ceegar offered to the gentleman who could correctly guess the identity of the smiling young man on our random page, two issues back?

Well, we really didn't think any of you fellows would guess who it was. The deal was all fixed up so that we here in the office could claim the prize. And here three of you have gone and guessed right!

Well, we never did have any luck, anyway.

Worse yet, we've got to buy three of the ceegars and money's tight gentlemen, money's tight.

The three lucky gentlemen are Harry R. Smith, Ohio salesman for the Rudy Furnace company; Roy Harrison, Illinois representative for Rudy Furnace company (they seem to know their smiles), and W. A. Laffin, who signs himself "the old one."

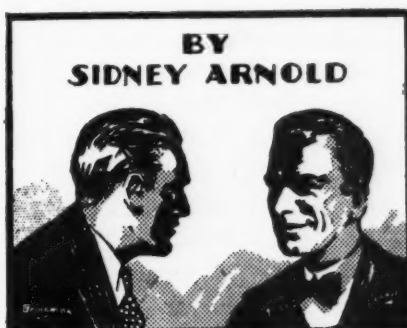
Just by explanation we can say that the same remarks about hair apply to "the old one" that we applied to the father. Yes, the boy has more than all the others put together.

"The old one" sent us a nice letter, too. Worth reproducing, at least in part. He says—

"You do know my weak spot and that is 'little Billy'. His dad used to be my weak spot, but it's a toss up now. The Laffins of Peoria, Chicago and New York and the Oettings of Hollywood and Pittsburgh will get a great kick out of the picture. I claim the 14 K ceegar."

Well he gets a ceegar. So do friends Harrison and Smith. They will be mailed properly with a sealed certificate.

Oh, yes, we almost forgot to tell you who the young man is. His



name is William Laffin, son of William Price Laffin of Peoria, Illinois. William the second is sales manager for Charles Johnson Company, Peoria.

You all know "Bill."

\* \* \*

## He Knew Her

Mrs. Campbell: "Dear, I saw the sweetest little hat downtown today."

Campbell: "Put it on and let me see how you look in it."—Cigar and Tobacco Journal.

\* \* \*

Here's good news for you fishermen. And most of us are fishermen.

Charlie Siebert, General Manager, Barnes Metal Products Company, Chicago, has just left Minnesota fishing grounds. He reports fishing excellent in spite of the dry season. The weather up there during the last two or three weeks, he says, has been something to write home about, hot enough to boil the fish if put in a shallow pool.

He didn't show us any fish, in fact not even a picture, but of course we understand that pictures never, never tell the truth about a fishing trip. There just aren't fish that size.



Chicago seems to be attracting a lot of the far distant members of the craft this summer. Just last week, C. Ackerson, Vice-President of the Agricola Furnace Company, Gadsden, Alabama, came in to say hello and ask how business was.

He said he had his family with him so the trip couldn't have been all business. The thing that we wanted to know—"How's business?" he answered in the affirmative and said it was darned good—considering.

While that wasn't very positive, it was far better than a lot of talk we have been hearing lately.

\* \* \*

## Furnace Men Can Use This

Customer—"To what do you owe your extraordinary success as a house-to-house salesman?"

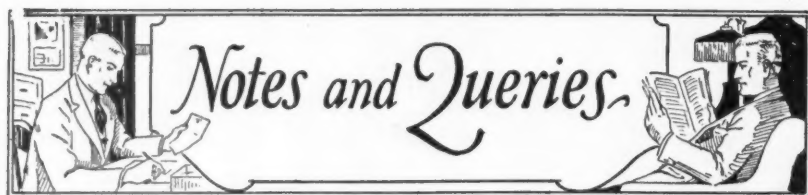
Salesman—"To the first five words I utter when a woman opens the door—"Miss, is your mother in?"

\* \* \*

Chicago, as a summer resort, doesn't bring all visitors on pleasure, however. In spite of recreation, we are still buying and selling things. In fact anything.

Which is just an introduction to some remarks on a visit paid us by Ira Rowell, Manager, Lakeside Company, Hermansville, Mich. Mr. Rowell is one of the merchandisers behind Furblo. This firm has also begun the sale of a complete furnace unit with blower and oil burner—the Piatt.

Furblo, according to Mr. Rowell, has some great plans under consideration, plans which will make the warm air heating industry sit up and take notice. This looks as though the company looks for increased business soon.



### Heat-Resisting Paints

From Earl Mahoney, 1313 South Liberty Street, Muncie, Indiana.

Please give me the names of firms making paint which will not burn off from the heat of the furnace.

Ans.—Wm. Connors Paint Mfg. Co., Troy, New York; E. I. du Pont de Nemours & Co., Philadelphia, Pennsylvania; Goheen Corporation, 331 Madison Avenue, New York City; Ohio Varnish Company, Industrial Division, Cleveland, Ohio, and Thompson and Company, 857 North Avenue, Pittsburgh, Pennsylvania.

We understand that a number of contractors are spraying lacquer on furnaces and ducts with good success.

### "Star" Ventilators in Chicago

From Wheeling Corrugating Company, 2547 Arthington Street, Chicago.

Do you know who in Chicago carries the "Star" ventilator in stock?

Ans.—This is made by Merchant and Evans Company, Philadelphia, Pennsylvania, and carried in Chicago by Sueske Brass and Copper Company, 14 North Peoria Street.

### "Hot Shot" Electric Heater

From M. G. Gray, 1714 Avenue A, Scottsbluff, Nebraska.

Can you tell me who makes the device which gives instant hot water by being connected to the water faucet and electric light socket?

Ans.—This is known as the "Hot Shot" electric heater, and is made by the Hot Shot Electric Water Heater Company, 520 North Michigan Avenue, Chicago.

### Cast Iron Smoke Pipe

From Charles Bruyn, Belvidere, Illinois.

From George J. Eiting, 413 South Main Street, Ann Arbor, Michigan.  
From John M. Wehner & Sons, Wapakoneta, Ohio.

Please advise who makes cast iron smoke pipe.

Ans.—Faultless Castings Company, Greencastle, Indiana, and The Waterloo Register Company, Waterloo, Iowa.

### Address of Middleby Marshall Oven Company

From Noble Sheet Metal Works, 119 South Stevens Street, Rhinelander, Wisconsin.

We should like to know where the Middleby Marshall Oven Company is located.

Ans.—769 West Adams Street, Chicago.

### "Iwan" Ventilators in Chicago

From Harry Monroe Commercial Sheet Metal Works, 1611 North Western Avenue, Chicago.

Who, in Chicago, carries the "Iwan" ventilators in stock?

Ans.—Chicago Metal Mfg. Co., 3724 South Rockwell Street.

### Address of Champion Stove Co.

From W. A. Kuehl, 42 South Butrick Street, Waukegan, Illinois.

Please tell me where the Champion Stove Company is located.

Ans.—3945 West 25th Street, Cleveland, Ohio.

### "Estate" Furnace

From F. C. Robinson, Franklin, Nebraska.

Will you kindly give me the name and address of the company making the "Estate" warm air furnace.

Ans.—Estate Stove Company, Hamilton, Ohio.

### Furnace Vacuum Cleaners

From Green Furnace and Metal Works, 229 South Main Street, Council Bluffs, Iowa.

Please tell us what firms make power furnace vacuum cleaners.

Ans.—Brillion Furnace Company, Brillion, Wisconsin; Invincible Vacuum Cleaner Manufacturing Company, Dover, Ohio; The Kent Company, Inc., 103 Canal

Street, Rome, New York; The National Super Service Company, 1943 North 13th Street, Toledo, Ohio; B. F. Sturtevant Company, Hyde Park, Boston, Massachusetts, and Williamson Heater Company, Cincinnati, Ohio.

### "Hotstream" Balanced Dampers

From Betlem Heating Company, 1926 East Avenue, Rochester, New York.

Can you tell us who makes Balanced Dampers for forced air garage heating with "Hotstream Mfg. Co." imprinted on them?

Ans.—Hotstream Heater Company, Cleveland, Ohio.

### "Eden" Washing Machine

From Gensmer and Son, Caledonia, Minnesota.

Who makes the "Eden" washing machine?

Ans.—Eden Washing Machine Company, 306 West Randolph Street, Chicago.

### "Martens" Cistern Filter

From E. L. Hyre, Saybrook, Illinois.

Can you tell us who makes the "Martens" cistern filter?

Ans.—Fort Wayne Filter Company, Fort Wayne, Indiana.

### Who Makes No. 13 "Reliable" Laundry Heater?

From Atlantic Supply Company, 1730-1734 Maryland Avenue, Baltimore, Maryland.

We should like to know who makes the No. 13 "Reliable" laundry heater.

Readers: Can you supply this information?

### Small Pressed Metal Frames

From Manily B. Updike, Daytona Beach, Florida.

Who makes small pressed metal frames to go around four or five inch glass lens?

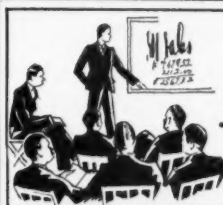
Ans.—Eberhardt & Company, 2411 West Roosevelt Road, Chicago.

### "Niagara" Tools and Machines in Chicago

From Carl O. Peterson, 502 Virginia Avenue, La Porte, Indiana.

Please advise me what Chicago firm handles the "Niagara" line of tools and machines.

Ans.—Maplewood Machinery Company, 2638 Fullerton Avenue.



## ASSOCIATION ACTIVITIES

### Wisconsin Board of Directors Hold Monthly Meeting

The monthly meeting of the Board of Directors, Master Sheet Metal Contractors Association was held July 2 in Milwaukee.

One of the important pieces of business transacted since the last meeting was the formation of a new local in Manitowoc. This new baby is composed of a splendid set of men representing the Sheet Metal Industry of Manitowoc and Two Rivers, and will be known as the "Manitowoc-Two Rivers Local." The boys up there are enthusiastic about their organization and will certainly show progress.

The annual picnic of the Milwaukee Local will be held on July 30 at Wolf's Island on the Milwaukee river. This resort can be reached over Highway 57. The committee has gone to considerable trouble and expense to make this event a grand success and those who have been so fortunate as to attend our last picnic will surely be on hand to participate. The entire membership of the State Association is invited to attend and the committee will appreciate it if those that expect to attend will advise them to that effect.

### Contractors, Jobbers and Salesmen of Cincinnati and Vicinity Hold Outing

The regular monthly meeting of the Sheet Metal Contractors' Association and Jobbers' and Salesman's Auxiliary was a picnic held at Avoca Park, Wooster Pike, north of Newtown bridge (west side of Miami river), Tuesday, July 8, 1930.

Promptly at 6:00 p. m. an excellent chicken dinner was served at a charge of \$1.50 per person.

A business meeting was held immediately after the dinner.

In the early afternoon everyone took part in and enjoyed various games of sport, including a game of soft ball in which the Salesmen beat the Contractors. Both teams came out even in a game of volley ball.

### Illinois Travelers Auxiliary Appeals for New Members

The Illinois Travelers Auxiliary to the Illinois Sheet Metal Contractors' Association is now sending



out a direct mail appeal for members—old and new.

The cost of the membership is \$7.00 for the firm and \$7.00 for

tion will be held at Long Acre Park, which is on Road 31 just south of Indianapolis, on Saturday, July 26. The picnic, while sponsored by the association, will be open to all branches of the sheet metal trade.

A statewide invitation has been issued and men prominent in the sheet metal trade from all parts of Indiana will attend. A special invitation has been issued to the Sheet Metal and Roofing Contractors Association of Louisville and it is certain that a good representation will be on hand to cement the friendly relationship of the trade elements of these two rival cities.

The festivities will begin at 10 o'clock in the morning and will continue throughout the day. A glance at the committees in charge of the various activities will give an idea as to the extent of the program. The committee list is as follows:

**PROGRAM**—Harry Beaman, chairman; O. Voorhees, Harry Neal, Fred Boone, W. P. Meador, John Herman, Jimmie Richwine, Mr. Eschenbach, Vern Reeder.

**REGISTRATION**—Harry Peterson, chairman; Mike Class, A. Turner, E. Fierek, Jack Troy, John Lauck.

**HORSESHOES**—Fred Wilkening, chairman; Florine Arnold, Charles Doyle, Dan Dorville, Mr. Lanham, Charles Goldstein, Chester Love, William Fredrick.

**BASEBALL**—O. A. Nichols, chairman; M. W. Thompson, Mr. Johnson, Arthur Steeb, Dale Sigmon, Raymond Hawkins, Roland Reeder, Bradford Snodgrass, Dick Fletemeyer.

**EQUIPMENT**—Otto B. Herrmann, chairman; Guy Voorhees, Ward Elzey.

**DRAYAGE**—Ward Elzey, chairman; Al Woerdeman, H. C. Geiger, Fred Hillman, Bert Clark.

**AUTOMOBILE**—Guy Lefforge, chairman; Walter Class, Joe Kress, N. C. Apgar, Charles E. Stevenson, Mike Schaeffer, Arthur Creekbaum, Charles Hauser, Mr. Rahe, Otto Riefles.

**TRANSPORTATION**—William Shea, chairman; Nick Rock, Robert Graham, John C. Henley, Milton Rybolt, Rollyn Hawkins, T. R. Lavery, Otis Moody, Walter Miller, T. J. Cornwall.

**REFRESHMENTS**—Robert Renick, chairman; Herman Schmidt, Sheldon Smith, H. C. Geiger, Ralph Jones, I. McFarland, Al Weinland, Paul West, Bob Kruse.

**DINNER COMMITTEE**—W. S. Waters, chairman; Harry Jones, Mrs. Pope, Mrs. Waters, Mrs. Lavery, Mrs. Class, Mrs. Mullen, Mrs. Herman, Mrs. Ed Gardner, Mrs. George Joslin, Ed Gardner, William Laut, Orville Merrill, Mr. Higgs.

**GAMES AND PRIZES**—Homer Selch, chairman; Ed Daufel, William Herman, Mr. Thompson, Harvey Smith, Henry Laut, Mr. Carr, Al Off, P. S. Williams, Homer Edwards, Mr. Kaser, A. Salvage, Otto Herrmann, Dick

#### MEMBERSHIP APPLICATION

TRAVELERS' AUXILIARY TO THE  
SHEET METAL CONTRACTORS' ASSN OF ILLINOIS

E. Cohn, Secretary,  
6736 Crandon Avenue, Chicago.

Accept this application for membership in the TRAVELERS' AUXILIARY for our firm and.

\*Illinois Travelers at \$7.00 each for the year ending April, 1931.

It is agreed we are to have free listing in this year's ROSTER.

Firm \_\_\_\_\_ Enclosed is  
Address \_\_\_\_\_ check for  
Products Sold \_\_\_\_\_ \$ \_\_\_\_\_  
Number of travelers memberships desired \_\_\_\_\_ at \$7.00  
Names listed on back of application. each. Send membership card.

each traveler. Ninety per cent of the funds collected go toward the expenses of the annual convention banquet. The 1931 convention is to be held in Chicago and a real convention is being planned for.

### Indianapolis Sheet Metal and Furnace Contractors Ass'n Will Hold Annual Picnic

The annual picnic of the Indianapolis Sheet Metal and Warm Air Heating Contractors Associa-

Skelton, Charles Nichols, George Joslin, Jack Pope.

STAND—A. Arnold, chairman; William Stewart, Fred McCain, Henry Kern, M. A. Braughton.

PUBLICITY—Paul R. Jordan, chairman; Frank Sink, William Off, Henry Bohlsen, Chester Erich, H. L. Bornman, Joe Beehm, Mr. Sheer, Joe Mattingly, Martin C. Wirth, Henry Eilers, Mart Brandenburg, George Joslin.

RECEPTION—E. R. Mullin, chairman; Harry Jones, Joseph Gardner, Hubert Jones, Fred Boone, Harry Beaman, L. A. Cooper, Virgil Roland, O. Voorhees, Ralph Reeder, Ralph Humphreys, R. C. Hamm, Jere Doherty, H. C. Thomson, A. L. Henry, Charles Tarpener, F. R. Eastwood, A. Voight, I. L. Needleman, Mike Friedman, Joel Tobin.

### Illinois State Committee Reports on Sale of Standard Practice Book

At a meeting of the committee of the Illinois Sheet Metal Contractors Association, held in Peru, Illinois, it was shown that thirty (30) books had been sold so far through the efforts of this committee. Those present were John Maier, chairman; Chas. Soedler, Clarence Snelson, Rudy Jobst and Geo. Harms.

The following suggestions were made:

(1) That in addition to the large folder issued by the National Association showing a page of cornice work, there should also be several pages showing roofing, spouting, etc., and probably one showing furnace installation.

(2) That the National Journal report what the Illinois committee is doing as an incentive to like committees in every part of the United States.

(3) That a large number of stickers be purchased by the National Association such as we are using to be distributed to all committee members and others.

(4) That the sticker also be used by all Auxiliary members.

(5) That Miss Cohn, secretary of the Auxiliary, be requested to notify all Auxiliary members what this committee is doing and urge them to help make sales.

(6) To request the National Association to send books upon consignment to the committee members as follows: Chas. Soedler, Peru, Ill., ten (10) books; to John Maier, Chicago Heights, Ill., twenty (20) books. The Excelsior Printing Company to be notified to let Mr. Maier have the books when he calls

for them and Mr. Soedler's to be ordered from Chicago.

(7) The committee decided to make a thorough canvas of the entire territory that is assigned to them calling on every Sheet Metal Contractor personally and later on to follow this by mail where books have not yet been sold.

The meeting adjourned subject to call of the chairman for another conference to report on progress.

One suggestion was presented but not strongly urged; namely, that Auxiliary members be allowed 10 per cent for the actual sale of books that they make.

### Fred R. Bishop Resigns from Premier Company

Fred R. Bishop, who has been with the Premier Warm Air Furnace Company, Dowagiac, Mich., has announced his resignation from that company, effective August 1.

No plans for the immediate future have been made.

### District Meeting Held June 20 in Lafayette, Indiana

On Friday, June 20, 1930, a District meeting was held at Lafayette, Indiana, with approximately 68 present from over the state. The Indianapolis traveled by automobile at 3:30 p. m., arrived in Lafayette and went to the Lincoln Lodge for a fish supper at 6:00 p. m. After a good supper, entertainment was furnished.

During the evening the mayor of Lafayette made a very interesting speech, and two state representatives also spoke. They promised if we would get back of the warm air movement they would try and help us to put it over, but it was up to the association to get the preliminaries worked out, and then they would put it up to the proper parties. There were also a number of other interesting talks.

Among those present were the following: Vice-President H. A. Beeman, Joe Gardner, Billy Waters, John Balkems, Paul Jordan and

Homer Selch, officers and directors of the Association, Frank DeWeese, District Governor of the Fort Wayne District, was also present, and D. R. Swisher, District Governor of the Richmond District, who gave a very cordial invitation to all to visit Richmond.

A good time was voted by all.

## After 44 Years

### A. A. Hare Retires

ON June 7, one of the oldest warm air heating men in this part of the country retired. That furnace man is Adrian A. Hare who was in business at 2112 Woodward Avenue, Detroit, for 44 years.

On that Saturday, Mr. Hare handed the keys to his shop and office over to his foreman, took a last look at the place, said good-bye and good luck to his associates and business neighbors and walked out of the shop headed for a rest in his old home town, Upper Sandusky, Ohio.

In the more than two-score years he was in business he had seen many changes in the world, in the commercial, social and political life of Detroit. He had seen the city grow from 200,000 to a metropolis eight times that large, to the fourth city on the continent.

He had seen the old block pavement give way to asphalt, the horse cars to the electric lines, the old tower lights replaced by a modern system of city lighting.

He had seen the automobile business begin, struggle, gain momentum and finally flare forth as one of the world's greatest enterprises.

He had seen Henry Ford develop from a humble mechanic, working for his day's wages, to the greatest industrialist in the history of the world.

"I've just plugged along all these years, trying to do business on the square, and I guess I've succeeded. Forty-four years is a long time.

"And now it's all over and I'm going back to the old home and—rest."

# TONCAN

**Let it rain!..**  
**TONCAN resists**  
**rust, corrosion**



**U**SE Toncan for all sheet metal work and you can forget all about rust and corrosion. Ventilators, cornices, spouting, piping—even roofing made of Toncan wears better lasts longer, offers more stubborn resistance to the ravages of weather, fire and lightning.

Toncan is a scientific alloy of pure iron, pure copper and molybdenum, made by America's largest and most highly specialized manufacturers of alloy metals.

Toncan builds good will, because it's *permanent*. Wherever protection from moisture is essential or desirable, build with Toncan and you build customer satisfaction for years to come.

Descriptive booklet free on request.

*Central Alloy Steel Division*  
**REPUBLIC STEEL CORPORATION**  
 YOUNGSTOWN, O.



*Mention AMERICAN ARTISAN in your reply—Thank you!*

# NEW ITEMS *and* NEWS ITEMS

## *From and about the Manufacturers and Jobbers*

### **Parker-Kalon Screw Inventor Awarded Certificate of Merit**

Heyman Rosenberg, Vice President of the Parker-Kalon Corporation of New York, was among the distinguished scientists and engineers to be honored recently by the Franklin Institute of Philadelphia by being awarded the Institute's Certificate of Merit for his development of Parker-Kalon hardened self-tapping screws.

His first achievement took the form of a self-tapping sheet metal screw for joining and making fastenings to light gauges of sheet metal. This screw, so threaded and hardened as to make it capable of cutting a thread in sheet metal, like a tap does in iron or steel, as it is screwed in, was such an outstanding improvement in fastening devices that its extensive adoption by the metal working industries followed quickly.

He next turned his thoughts to the problem of making fastenings to solid sections of material, such as iron, brass and aluminum castings, steel, bakelite, etc.; where the tapping of holes is often a factor in the cost of the article. After a good deal of research and experiment, Mr. Rosenberg devised and patented the hardened metallic drive screw. This screw has a spiral form of hardened thread, which cuts or forms a corresponding female thread in the material as it is hammered in or otherwise driven in. Because of the savings in time and labor that these screws bring about, they are today being used in the assembly of hundred of articles from the materials mentioned.

As the original sheet metal screw was suitable only for use in light gauges of metal and as the hardened metallic drive screw could be

used only where a permanent fastening was desired, due to the fact that once driven in this screw could not readily be removed, there still existed a need for a similar device which could be used in heavy gauges of sheet steel; and also one suitable for making fastenings to solid sections of material and which could be removed and reinserted when necessary.

This need resulted in the invention of the screwnail, combining the driving qualities of a nail and the holding qualities of a screw. This device gives a more secure means of fastening sheet metal to wood and has proved just as practicable and efficient as the other products.

### **Wise Furnace Co. Issues Catalog on New Gas Furnaces**

The Wise Furnace Company of Akron, Ohio, has recently issued a 16 page booklet describing their new gas furnaces for natural or artificial gas.

A one page article on "Heating with Gas" explains why heating



with gas is so much better, and gives nine distinct advantages of this form of heating. A description of the furnaces occupy the next few pages.

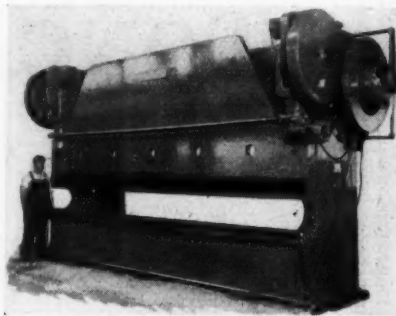
The last part of this booklet contains measurements and capacities of the Wise Gas Furnaces and casing measurements.

This booklet may be had for the asking.

### **Cincinnati Shaper Company Builds Press Brake 16 Feet Long**

An unusually long press brake was recently built by The Cincinnati Shaper Company. It has an overall die surface of 16 ft. 0 in. with 14 ft. 16 ft. between the housings. All the main members are made of rolled steel plates.

It has a capacity to form, with-



out overload, right angles in 3/16 in. steel, 16 ft. long, over a 1½ in. die to a 3/16 in. radius.

The design incorporates two noteworthy features: First, cylindrical or spherical bearings throughout between load carrying members, particularly the saddle to the ram and the mounting of the bed to the housings. This construction does away with all sharp corners as a source of weakness and allows full and unrestrained action of every member. Second, all loads are transmitted directly up the center line of both housings, which eliminates distortion from eccentric loads.

The adjustment to the ram is motorized; the drive is multiple "V" belt to the flywheel; all bear-

# ARMCO

## INGOT IRON

brings  
repeat  
business

**I**T is one problem to win a customer, and still another to *hold* him. Thousands of contractors have learned that Armco INGOT IRON combined with skillful, conscientious work *does* bring repeat business in ever-increasing and profitable volume.

Many a capable contractor has built up a flourishing business by using and recommending Armco INGOT IRON. People know this durable iron, believe in its economy, and are easily persuaded to use it for every requirement.



Here is an interesting aerial view of the dormitories and class buildings of the Greater Wesleyan College for Women, near Macon, Georgia. Sheet Metal Contractor L. M. Leathers, of Athens, Georgia, was given the heating and ventilating duct work, and, having had much success with Armco Ingot Iron he recommended that durable sheet metal.

Put in a stock of Armco INGOT IRON sheets and formed products. Then watch how this uniform, easy-working iron cuts shop costs and develops profitable business. There is a distributor near to serve you promptly.

This is the familiar symbol that identifies Armco INGOT IRON sheets and formed products. It stands for the skill and experience of Armco—a company that has pioneered and specialized in the manufacture of high-grade special analysis iron and steel sheets for nearly thirty years. Always point out this triangle to your customers, so they may know they are getting long-lasting, low-yearly-cost sheet metal.



**THE AMERICAN ROLLING MILL COMPANY**  
Executive Offices, Middletown, Ohio

Export: The ARMCO International Corporation

DISTRICT OFFICES:	Chicago	Detroit	Pittsburgh
	Cincinnati	New York	St. Louis
	Cleveland	Philadelphia	San Francisco

**“BE SURE IT’S MADE OF ARMCO INGOT IRON”**

Say you saw it in *AMERICAN ARTISAN*—Thank you!

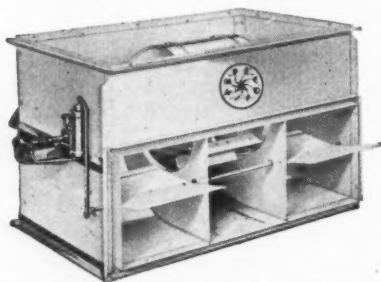
ings are either anti-friction or bronze bushed; ram guides are gibbed in both directions; lubrication is fully automatic.

#### **Am-Pe'-Co Rotary Blower Said to Have Unusual Features**

The Am-Pe'-Co Rotary blower, manufactured by the American Machine Products Company, Marshalltown, Iowa, is said by the manufacturers to have several unusual features.

The slogan of the company's advertising is—"There is no doubt about it, the dampers are either open or closed."

In operation this blower utilizes an oil pump and a regulator of special design to furnish the power to



positively close the dampers on either side of the outlet as soon as the blower is in operation.

As soon as the blower stops the dampers mechanically open.

It is said that the blower supplies a greater than usual quantity of gravity air. This adds to the protection of the furnace against excessive firing or some accident to the power supply at a time when the furnace is overheated. This feature is made possible because of the distributing chamber back of the scroll. There is here a minimum of obstruction in the design of the rotor and the air distributing chamber permits the entry of air to 75 per cent of the inlet openings.

#### **Knoedler Machinery Exchange Opens New Office and Warehouse**

The Knoedler Machinery Exchange announces the opening of its new office and warehouse at 23 South Second Street.

The company handles used and new sheet metal machines and tools.

#### **Blair A. Quick Now Sales Manager for Independent Register & Mfg. Co.**

The Independent Register and Manufacturing Co., Cleveland, Ohio, announce the appointment of Blair A. Quick as sales manager. Mr. Quick has had a long and practical experience and enjoys a wide acquaintance in the heating industry.

Mr. Quick succeeds John A. Thomas, who has been Sales Manager for the past five years. Mr. Thomas resigned his position to enter another line of activity.

#### **Payne Furnace & Supply Co., Inc., Announces New Southern Distributor**

Payne Furnace and Supply Co., Inc., reports that the company is rapidly opening up new jobbing connections throughout the south.

The most recent appointment is the Moncrief Furnace Company at Atlanta, Ga. This well known firm will represent the Payne Furnace and Supply Co., Inc., throughout the state of Georgia. Mr. L. F. Kent is the executive head of the organization and their general offices are located at 676-682 Hemp-hill avenue, N. Y.

#### **William Stringham Made Vice President American Rolling Mill Co.**

William Stringham, Assistant General Superintendent of the East Works plant of The American Rolling Mill Company, of Middletown, Ohio, since 1923, has been made Assistant Vice President of the American Rolling Mill Company.

#### **Technical Products Co. Shows "Metalute" At National Show**

One of the exhibitors at the National Sheet Metal Convention at Pittsburgh was the Technical Products Company, manufacturers of "Metalute," a plastic iron cement.

During the convention, demonstrations of casting setting were made to interested spectators.

The company claims that "Meta-



lute" makes furnace setting a very easy operation and insures a gas-tight furnace.

"Metalute" is an all-iron cement, free from clay, asbestos and water-glass. The company will be pleased to send samples and literature to anyone interested.

The gentleman in the booth is C. Fred Sauereisen, president and chief engineer.

#### **Arthur F. Ericson New San Francisco Manager for Minneapolis-Honeywell**

Announcement is made of the appointment of Arthur F. Ericson as manager of the new San Francisco office of the Minneapolis-Honeywell Regulator Company. At the head of his own company, the Arthur F. Ericson



Company, he has distributed Minneapolis-Honeywell products on the Pacific coast for the past five years. He invented the first solenoid operated gas valve and his patents are still the basis on which Minneapolis-Honeywell Series 20 Valves are made.

Mr. Ericson brings to his new position a fund of practical and technical engineering experience.

# A NEW SHEET STEEL



**With these  
far-reaching  
advantages...**

## *Does Not Flake*

Inland's long experience applied through research to the problem of developing a non-flaking galvanized sheet has produced Gal-Van-Alloy. No zinc coat, as such. The zinc is alloyed with the base. Hence Gal-Van-Alloy withstands more severe double seaming and deeper draws than is possible with other grades of sheet steel, without flaking.

## *Better Base for Finishing*

Appearance is perhaps the most powerful sales appeal today. Gal-Van-Alloy will make it even more powerful. For beauty of finish is permanent when paint, lacquer or enamel is applied to Gal-Van-Alloy. No flaking of the zinc and the finish itself sticks longer to the smooth surface of Gal-Van-Alloy. Two grades assure the degree of finish-perfection desired. Regular Gal-Van-Alloy is well adapted to take ordinary finishes—Gal-Van-Alloy Special has been developed as a base for high grade enamels and other particular finishes.

## *Withstands More Heat*

Gal-Van-Alloy withstands more heat, more severe changes in temperature without flaking. Because the zinc does not flake, any finish applied stands up better.

## *Lasts Longer*

The life of ordinary galvanized sheets is measured by the life of the zinc coat. Gal-Van-Alloy will not flake—will not open the door to rust and corrosion. For exceptionally long life, Gal-Van-Alloy is supplied with Inland Copper-Alloy base when desired, assuring the utmost in resistance to corrosion.

**DOES NOT FLAKE**

**BETTER BASE  
FOR FINISHES**

**WITHSTANDS  
MORE HEAT**

**LASTS LONGER**

**Save with Steel**

# INLAND STEEL COMPANY

Sheets  
Bars  
Plates  
Structurals

ABLE SERVANT OF  THE CENTRAL WEST

38 SOUTH DEARBORN STREET, CHICAGO

Rails  
Track Accessories  
Rivets  
Billets

Mention AMERICAN ARTISAN in your reply—Thank you!

# ~ MARKET QUOTATIONS ~

AMERICAN ARTISAN is the only publication quoting Prices on Metals, Sheet Metal Equipment and Supplies, Warm Air Heating Supplies and Accessories, corrected bi-weekly. These quotations are not guaranteed but are obtained from reliable sources and reflect nation-wide market conditions at the time of going to press.

NOTE—These prices are Chicago Warehouse Prices to which must be added territory differentials

## METALS

### PIG IRON

Chicago Fdy.,	
No. 2	\$18.00
Southern Fdy. No. 2	18.01
Lake Superior Charcoal	27.04
Malleable	18.00

### FIRST QUALITY BRIGHT CHARCOAL TIN PLATES

IC	20x28	112 sheets	\$22.50
IX	20x28	112 sheets	25.50
IXX	20x28	56 sheets	14.50
IXXX	20x28	112 sheets	15.50
IXXXX	20x28		17.00

### TERNE PLATES

IC	20x28, 40-lb.	112 sheets	\$25.00
IX	20x28, 40-lb.	112 sheets	27.75
IX	20x28, 25-lb.	112 sheets	21.15
IX	20x28, 25-lb.	112 sheets	23.80
IC	20x28, 20-lb.	112 sheets	19.55
IV	20x28, 20-lb.	112 sheets	22.05

### "ARMCO" INGOT IRON PLATES

No. 8 ga.—110 lbs.	\$4.15
3/16 in.—100 lbs.	4.05
1/4 in.—100 lbs.	3.85

### COKE PLATES

Cokes, 80 lbs., base, 20x28	\$12.00
Cokes, 90 lbs., base, 20x28	12.20
Cokes, 100 lbs., base, 20x28	13.75
Cokes, 107 lbs., base, IC,	
20x28	12.75
Cokes, 135 lbs., base, IX,	
20x28	14.75
Cokes, 155 lbs., base, 2X,	
56 sheets	8.50
Cokes, 175 lbs., base, 3X,	
56 sheets	9.35
Cokes, 195 lbs., base, 4X,	
56 sheets	10.25

### BLUE ANNEALED SHEETS

Base 10 ga.—per 100 lbs.	\$3.35
"Armco" 10 ga.—per 100 lbs.	4.15

### ONE PASS COLD ROLLED BLACK

No. 18-20	per 100 lbs.	\$3.85
No. 22	per 100 lbs.	4.00
No. 24	per 100 lbs.	4.05
No. 26	per 100 lbs.	4.15
No. 27	per 100 lbs.	4.20
No. 28	per 100 lbs.	4.30

### GALVANIZED

No. 16	per 100 lbs.	\$4.10
No. 18	per 100 lbs.	4.20
No. 20	per 100 lbs.	4.40
No. 22	per 100 lbs.	4.45
(Standard differentials on extras to apply)		
No. 24	per 100 lbs.	\$4.60
No. 26	per 100 lbs.	4.85
No. 27	per 100 lbs.	4.95
No. 28	per 100 lbs.	5.10
"Armco" 24	per 100 lbs.	6.15

### BAR SOLDER

Warranted 50-50	per 100 lbs.	\$22.50
45-55	per 100 lbs.	21.50
48-52	per 100 lbs.	20.50
Plumbers'	per 100 lbs.	18.00

### ZINC

In Slabs	\$5.50
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### SHEET ZINC

Cask Lots (600 lbs.)	\$12.00
Sheet Lots (100 lbs.)	13.00

### BRASS

Sheets, Chicago base	18 1/4 c
Tubing, brazed, Chicago base	23 1/4 c
Tubing, seamless, Chicago base	23 1/4 c
Wire, Chicago base	18 1/4 c
Rods, Chicago base	16 1/4 c

## COPPER

Sheets, Chicago base	21 1/4 c
Tubing, seamless, Chicago base	23 1/4 c
Wire, plain rd., 8 B. & S. Ga.	
and heavier	13 1/4 c

## LEAD

American Pig	\$6.50
Bar	8.50

## TIN

Bar Tin	per 100 lbs. \$39.00
Pig Tin	per 100 lbs. 38.00

## SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES

### ASBESTOS

Paper up to 1/16	6c per lb.
Roll board	7 1/4 c per lb.
Mill board 3/32 to 1/4	7 1/4 c per lb.
Corrugated paper (250 sq. ft. per roll)	\$6.00 per roll

### ASBESTOS SEGMENTS

8 in.	per 100 sets	\$7.30
9 in.	per 100 sets	8.30
10 in.	per 100 sets	9.30
12 in.	per 100 sets	10.50

### CEMENT FURNACE

American Seal, 5-lb. cans, net	\$0.40
American Seal, 10-lb. cans, net	0.80
American Seal, 25-lb. cans, net	2.00
Pecora	per 100 lbs. 7.50

## CLIPS

Damper	
No-Rivet Steel, with tail pieces	per gross \$9.50
Rivet Steel, with tail pieces	per gross 7.50
Tail pieces, per gross	2.40

### COPPER FOOTING

Copper Footing	34%
----------------	-----

### CORNICE BRAKES

Chicago Steel Bending	
Nos. 1 to 6B	Net

## CUT-OFFS

Cal., plain, round or cor. rd.	
26 gauge	30%
28 gauge	35%

## DAMPERS

Yankee Hot Air	
7 inch, doz.	\$1.60
8 inch, doz.	2.20
9 inch, doz.	2.60
10 inch, doz.	2.80
12 inch, doz.	3.50
14 inch, doz.	5.00

### EAVES TROUGH

Galv. Crimpedge, crated	75-10%
Zinc, "Barnes"	60%

## ELBOWS

Conductor Pipe	
Galv. plain or corrugated, round flat Crimp.	
28 gauge	60%
26 gauge	45%
24 gauge	15%

Galv. Terne Steel	
Plain Rd. and Rd. Corr.	
28 gauge	60%
26 gauge	45%
24 gauge	15%

## Square Corrugated

28 gauge	50%
26 gauge	35%

## Portico Elbows

Standard Gauge Conductor Pipe, plain or corrugated.	
Not nested	70 & 5%
Nested solid	70 & 5%

## Sq. Corr., A. & B. & Octagon

28 gauge	50%
26 gauge	35%

## Portico

1, 1 1/4, 1 1/2 inch	45%
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## Copper

16 oz. all designs	45%
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## Zinc

All styles	60%
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## ELBOWS—Stove Pipe

1-piece Corrugated, Uniform Blue "Milcor" No. 28 Gauge.	Doz.
5 inch	\$1.15
6 inch	1.26
7 inch	1.75

## Special Corrugated

6 inch	\$1.00
7 inch	1.60

## Adjustable—Uniform Blue

"Milcor" No. 28 Gauge, Uniform Blue.	
5 inch	\$1.60
6 inch	1.75
7 inch	2.10

## WOOD FACES—60% off list.

## FIRE POTS

Geo. W. Diener Mfg. Co.	
No. 02 Gasoline Torch, 1 qt.	\$5.13
No. 0250, Kerosene, or Gasoline Torch, 1 qt.	6.50
No. 10 Tinner's Furnace	
Square tank, 1 gal.	11.20
No. 15 Tinner's Furnace	
Round tank, 1 gal.	10.70
No. 21 Gas Soldering Furnace	8.00
No. 110 Automatic Gas Soldering Furnace	10.50

## GLASS

Single and Double Strength, A.	
all brackets	85%
Single and Double Strength, B.	
all brackets	87%

## HANGERS

Conductor Pipe	
Milcor Perfection Wire	25%
Milcor Triplex Wire	10%

## Eaves Trough

Milcor Steel (galv. after forming) from list	45%
Milcor Selflock E. T. Wire, List	10%

## HOOKS

Conductor	
"Direct Drive" Wrought Iron for wood or brick	15%

## MITRES

Galvanized Steel Mitres	
28 gauge	70
26 gauge	60-20

## PASTE

Asbestos Dry Paste	
200-lb. barrel	\$15.00
100-lb. barrel	7.75
50-lb. pail	4.50
25-lb. pail	2.50
10-lb. bag	1.20
5-lb. bag	0.60

## PIPE

Galvanized	
Crated and nested (all gauges)	75-7 1/4%
Crated and not nested (all gauges)	75-2 1/4%
Furnace Pipe	
Double Wall Pipe and Fittings	60%
Single Wall Pipe, Round Galvanized Pipe	60%
Galvanized and Tin Fittings	60%

Lead	
Per 100 lbs.	\$12.50
Store Pipe	
"Milcor" "Titelock" Uniform Blue Stove	
28 gauge, 5 inch U. C.	
nested	\$11.00
28 gauge, 6 inch U. C.	
nested	12.00
28 gauge, 7 inch U. C.	
nested	14.00
30 gauge, 5 inch U. C.	
nested	10.25
30 gauge, 6 inch U. C.	
nested	11.00
30 gauge, 7 inch U. C.	
nested	13.00

T-Joint Made Up	
6 inch, 28 ga.	per doz. \$3.40

## REGISTERS AND FACES

Floor Registers	
Except Cast Iron	40 & 10%
Cast Iron	20%

Baseboard	
2-Piece	40 & 10%
1-Piece	40-10 & 20%

Adjustable Ventilators	
Adjustable Cold Air Faces	40 & 10%
Adjustable Ventilators	40 & 10%

## RIDGE ROLL

Galv. Plain Ridge Roll, b'd'd	75-15-5%
Galv., Plain Ridge Roll, crated	75-15%

## SCREWS

Sheet Metal	
7, 1/4 x 1/4, per gross	\$0.52
No. 10, 1/4 x 1/4, per gross	0.63
No. 14, 1/4 x 1/4, per gross	0.83

## SHEARS, TINNERS' AND MACHINISTS'

Viking	\$22.00
Lennox Throatless	

No. 18	35%
Shear blades	10%
(f. o. b. Marshalltown, Iowa.)	

## SHOES

Galv. 28 Gauge, Plain or Corrugated, round flat crimp	60%
26 gauge, round flat crimp	45%
24 gauge, round flat crimp	15%

## SNIPS, TINNERS'

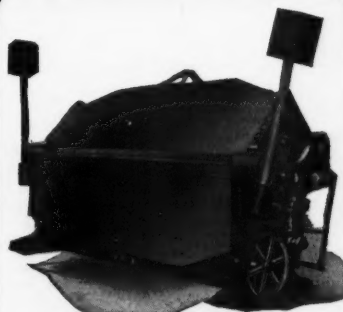
Milcor	Net
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## VENTILATORS

Standard	30 to 40%
Milcor	Net

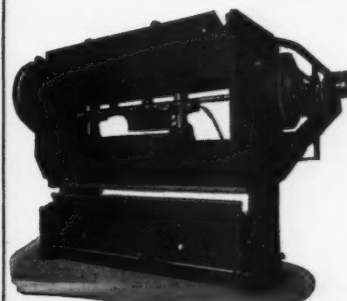
## CHICAGO STEEL BENDING BRAKES AND FORMING PRESSES

The perfected result of over 30 years experience in the manufacture of sheet metal bending machines. Over 25,000 machines in use.



POWER BRAKE

Hand Brakes  
Cornice Brakes  
Power Brakes  
Box and Pan Brakes  
Forming Presses  
Special Brakes and Presses



FORMING PRESS

The most complete and up-to-date line of sheet and plate bending and forming machines in the world. Lengths, 3 to 16 feet, with capacity to bend from the lightest metals up to 3/4 in. plate, cold.

**DREIS & KRUMP MANUFACTURING CO.**

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## Aeroplane ROTARY VENTILATOR



Write  
for  
complete  
catalog  
today

THIS is a top balanced ventilator that is free swinging, perfectly balanced and sensitive to the lowest air movements.

THE main bearing is our own patented design. Simple and absolutely reliable under all conditions. It is of special bronze on steel, non-corrosive and of the one-ball type. It is practically frictionless. The Aeroplane is a correctly designed, highly efficient well made ventilator. It is well braced, reinforced with riveted steel segments and riveted and seamed throughout. You can sell it with confidence that it will do its work well and last long.

**PAUL R. JORDAN & CO.**

630 South Delaware St.

Indianapolis, Ind.

## ROCKFORD

**Registers  
Furnace Pipe  
and Fittings**

24 Hour Service

ROCKFORD SHEET STEEL CO., Rockford, Ill.

**FURNACE SUPPLIES**

DETROIT-CLEVELAND-BUFFALO

**THE J.M.&L.A.  
OSBORNE**

**EVERYTHING  
USED IN SHEET METAL WORK**

ASK FOR CATALOGUE OR PRICES

Say you saw it in AMERICAN ARTISAN—Thank you!

# BUYERS' DIRECTORY

- Air Cleaners**  
Meyer & Bro. Co., F., Peoria, Ill.
- Aluminum Sheets**  
J. M. & L. A. Osborn Co., Cleveland, Ohio
- Blast Gates**  
Berger Bros. Co., Philadelphia, Pa.
- Blowers—Furnace**  
American Machine Products Co., Marshalltown, Iowa  
Brundage Co., Kalamazoo, Mich.  
Lakeside Co., Hermansville, Mich.
- Bolts—Stove**  
Lamson & Sessions Co., Cleveland, Ohio  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
- Brakes—Bending**  
Dreis & Krump Mfg. Co., Chicago, Ill.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
- Brakes—Cornice**  
Dreis & Krump Mfg. Co., Chicago, Ill.
- Brass and Copper**  
American Brass Co., Waterbury, Conn.  
Chase Brass & Copper Co., Waterbury, Conn.  
Copper & Brass Research Association, New York, N. Y.  
Revere Copper & Brass, Rome, N. Y.
- Bronze**  
Revere Copper & Brass, Rome, N. Y.
- Cans—Garbage**  
Diener Mfg. Co., G. W., Chicago, Ill.  
Osborn Co., The J. M. & L. A., Cleveland, Ohio
- Castings—Malleable**  
Fanner Mfg. Co., Cleveland, Ohio
- Ceilings—Metal**  
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
- Chaplets**  
Fanner Mfg. Co., Cleveland, Ohio
- Cleaners—Vacuum**  
Brillion Furnace Co., Brillion, Wis.  
National Super Service Co., Toledo, Ohio
- Copper**  
American Brass Co., Waterbury, Conn.  
Chase Brass & Copper Co., Waterbury, Conn.  
Revere Copper & Brass, Rome, N. Y.  
Rockford Sheet Steel Co., Rockford, Ill.
- Cornices**  
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
- Cut-offs—Rain Water**  
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
- Dampers—Quadrants—Accessories**  
Hart & Cooley Co., Holland, Mich.  
Mil., Canton, Chgo., La Crosse, K. C.  
Parker-Kalon Corp., New York, N. Y.
- Dampproofings**  
Lastik Products Corp., Pittsburgh, Pa.
- Damper Regulators**  
Sheer Co., H. M., Quincy, Ill.
- Diffuser—Air Duct**  
Aeolus-Dickinson Co., Chicago, Ill.
- Drills—Electric**  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.  
J. M. & L. A. Osborn Co., Cleveland, Ohio  
The Stanley Electric Tool Co., New Britain, Conn.
- Drive Screws—Hardened Metallic**  
Parker-Kalon Corp., 200 Varick St., New York
- Dust Eliminator**  
Dustless Ash Co., Muskegon, Mich.
- Eaves Trough**  
Barnes Metal Products Co., Chicago, Ill.  
Berger Bros. Co., Philadelphia, Pa.  
Chase Brass & Copper Co., Waterbury, Conn.  
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.  
Rockford Sheet Steel Co., Rockford, Ill.
- Elbow and Shoes—Conductor**  
Apex Gutter Hanger Corp., New York, N. Y.  
Barnes Metal Products Co., Chicago, Ill.  
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.  
Rockford Sheet Steel Co., Rockford, Ill.
- Fittings—Conductor**  
Barnes Metal Products Co., Chicago, Ill.  
Braden Mfg. Co., Terre Haute, Ind.  
Mil., Canton, Chgo., La Crosse, K. C.
- Fluxes—Soldering**  
Kester Soldering Co., Chicago, Ill.
- Furnace Cement**  
Connors Paint Mfg. Co., Wm., Troy, N. Y.  
Lastik Products Corp., Pittsburgh, Pa.  
Mil., Canton, Chgo., La Crosse, K. C.
- Furnace Chain**  
Hart & Cooley Co., Holland, Mich.
- Furnace Cleaners—Suction**  
Brillion Furnace Co., Brillion, Wis.  
National Super Service Co., Toledo, Ohio
- Furnace Fans**  
A-C Mfg. Co., Pontiac, Ill.  
Brundage Co., The, Kalamazoo, Mich.  
Lakeside Co., Hermansville, Mich.  
Robinson Co., A. H., Massillon, Ohio
- Furnace Paste**  
Western Mineral Products Co., Omaha, Neb.
- Furnace Pokers**  
Fanner Mfg. Co., Cleveland, Ohio
- Furnace Pulleys**  
Hart & Cooley Co., Holland, Mich.
- Furnace Regulators**  
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.  
Sheer Co., H. M., Quincy, Ill.  
White Mfg. Co., Minneapolis, Minn.
- Furnace Rings**  
Forest City-Walworth Run Foundries Co., Cleveland, Ohio  
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
- Furnace Switch—Automatic**  
Payne Furnace & Supply Co., Beverly Hills, Cal.  
Robinson Co., A. H., Massillon, Ohio
- Furnaces—Gas**  
Payne Furnace & Supply Co., Beverly Hills, Cal.  
Robinson Co., A. H., Massillon, Ohio  
Rudy Furnace Co., Dowagiac, Mich.  
Wise Furnace Co., Akron, Ohio
- Furnaces—Warm Air**  
Agricola Furnace Co., Gadsden, Ala.  
American Furnace Co., St. Louis, Mo.  
The Beckwith Co., Dowagiac, Mich.  
Brillion Furnace Co., Brillion, Wis.  
Farris Furnace Co., Springfield, Ill.  
Forest City-Walworth Run Fdy., Cleveland, Ohio  
Fox Furnace Co., Elyria, Ohio  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Heas Warming & Ventilating Co., Chicago, Ill.  
Langenberg Mfg. Co., St. Louis, Mo.  
London Furnace Co., London, Ohio  
Lennox Furnace Co., Marshalltown, Iowa  
Syracuse, N. Y.  
May Flebeger Furnace Co., Newark, Ohio  
Meyer Furnace Co., The, Peoria, Ill.  
Midland Furnace Co., Columbus, Ohio  
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.  
Payne Furnace & Supply Co., Beverly Hills, Cal.  
Premier Warm Air Heater Co., Dowagiac, Mich.  
Peerless Foundry Co., Indianapolis, Ind.  
Robinson Co., A. H., Massillon, Ohio  
Rudy Furnace Co., Dowagiac, Mich.  
Standard Fdy. & Furnace Co., De Kalb, Ill.  
Success Heater Mfg. Co., Des Moines, Iowa  
Schwab & Sons Co., R. J., Milwaukee, Wis.  
Waterman-Waterbury Co., Minneapolis, Minn.  
Western Steel Products Co., Duluth, Minn.  
Wise Furnace Co., Akron, Ohio
- Gas Burning Attachments**  
Munkel-Rippel Heating Co., Columbus, Ohio
- Grilles**  
Auer Register Co., Cleveland, Ohio  
Harrington & King Perforating Co., Chicago, Ill.  
Hart & Cooley Co., New Britain, Conn.  
Independent Register & Mfg. Co., Cleveland, Ohio
- Guards—Machine and Belt**  
Harrington & King Perforating Co., Chicago, Ill.
- Handles—Boiler**  
Berger Bros. Co., Philadelphia, Pa.
- Handles—Soldering Iron**  
Hyro Mfg. Co., New York, N. Y.
- Handles—Furnace Door**  
Fanner Mfg. Co., Cleveland, Ohio
- Hangers—Eaves Trough**  
Apex Gutter Hanger Corp., New York, N. Y.  
Berger Bros. Co., Philadelphia, Pa.  
Chase Brass & Copper Co., Waterbury, Conn.  
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
- Heat Regulation Systems**  
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.  
Sheer Co., H. M., Quincy, Ill.  
White Mfg. Co., Minneapolis, Minn.
- Heaters—Cabinet**  
Fox Furnace Co., Elyria, Ohio  
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.  
Payne Furnace & Supply Co., Beverly Hills, Cal.  
Waterman-Waterbury Co., Minneapolis, Minn.
- Heaters—Combination Water**  
Standard Fdy. & Furnace Co., De Kalb, Ill.
- Heaters—Domestic Hot Water**  
Standard Fdy. & Furnace Co., De Kalb, Ill.
- Heaters—School Room**  
Meyer Furnace Co., The, Peoria, Ill.  
Western Steel Products Co., Duluth, Minn.  
Waterman-Waterbury Co., Minneapolis, Minn.
- Humidifiers**  
Diener Mfg. Co., G. W., Chicago, Ill.  
Meyer & Bro. Co., F., Peoria, Ill.  
Sheer Co., H. M., Quincy, Ill.
- Lath—Expanding Metal**  
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
- Machines—Crimping**  
Bertsch & Co., Cambridge City, Ind.
- Machinery—Culvert**  
Bertsch & Co., Cambridge City, Ind.  
Interstate Machinery Co., Chicago, Ill.
- Machines—Tinsmith's**  
Bertsch & Co., Cambridge City, Ind.  
Dreis & Krump Mfg. Co., Chicago, Ill.  
Hyro Mfg. Co., New York, N. Y.  
Interstate Machinery Co., Chicago, Ill.  
Marshalltown Mfg. Co., Marshalltown, Iowa  
Osborn Co., The J. M. & L. A., Cleveland, Ohio  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.  
The Stanley Electric Tool Co., New Britain, Conn.  
Whitney Mfg. Co., W. A., Rockford, Ill.
- Metals—Perforated**  
Harrington & King Perforating Co., Chicago, Ill.
- Miters—Eaves Trough**  
Barnes Metal Products Co., Chicago, Ill.  
Berger Bros. Co., Philadelphia, Pa.  
Braden Mfg. Co., Terre Haute, Ind.  
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
- Nails—Copper and Brass**  
Chase Brass & Copper Co., Waterbury, Conn.  
Revere Copper & Brass, Rome, N. Y.

(Continued on page 54)

Say you saw it in AMERICAN ARTISAN—Thank you!



# Machines

that make extra profits  
for

THE SHEET METAL SHOP

Rotary Throatless Shears  
—hand or power operated

Plate Bending Rolls

Splitting Shears

Bevel Shears

Punch Presses

Pressure Gauges

Address Dept. A. A. for Catalog

MARSHALLTOWN MANUFACTURING CO.  
Marshalltown, Iowa

## TWO TAYLOR'S BRANDS

to Tie to

First in the minds of sheet metal men is our famous HAND MADE roofing tin—the highest quality, longest lived roofing tin in the world, the old "TAYLOR'S" Old Style, known since 1905 by the new name.



Now we have gotten out a New Tin, but the best machine made plate ever produced, for those who want to pay less. This is known as

Taylor's Extra Coated  
40 lb. Copper Bearing O. H.

Ample stocks carried by all distributors.  
Ask them for TAYLOR'S.

N. & G. TAYLOR COMPANY  
CUMBERLAND, MARYLAND

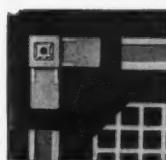
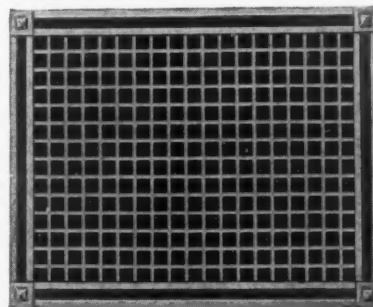
Headquarters for Good Roofing Tin Since 1810



(Trade Mark)

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Beautiful—Convenient—Economical

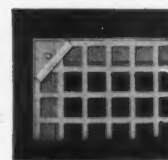


"Grilframe" parts  
ready for assembly  
(Front view)

"GRILFRAME"  
is completely assembled  
from stock parts. This  
new method makes possible 48 hour service

Distributors are being appointed in principal cities

SEND FOR CATALOG



Grille secured to  
frame with lug  
(Back view)

## H & K GRILLES

H & K grilles are well known throughout the country and for excellence of workmanship and beauty of design are not surpassed. Grilframe construction is adapted to all of H & K grille designs and rounds out the line of our punched metal grilles. Ask for catalog No. 28.

## PERFORATED METAL

EVERY type of perforated metal from the finest to the largest standard sizes are within the scope of our equipment. This means round, oblong, slot, square holes and many special shapes suitable for metal of different kinds and thicknesses.

Write us for perforated metal  
of every sort

THE HARRINGTON & KING  
PERFORATING COMPANY

5649 Fillmore Street

Chicago, Ill.

New York Office: 114 Liberty Street

# BUYERS' DIRECTORY

(Continued from Page 52)

## Nails—Hardened Masonry

Parker-Kalon Corp., New York, N. Y.

## Oil Burners

Crystal Oil Burner Corp., New York, N. Y.  
 Mellvaine Burner Corp., Evanston, Ill.  
 Silent Automatic Corp., Detroit, Mich.

## Paint

Connors Paint Mfg. Co., Wm., Troy, N. Y.

## Perforated Metals

Harrington &amp; King Perforating Co., Chicago, Ill.

## Pipe and Fittings—Furnace

Henry Furnace & Fdy. Co., Cleveland, Ohio  
 Lamneck & Co., W. E., Columbus, Ohio  
 Meyer & Bro. Co., F., Peoria, Ill.  
 Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.  
 Osborn Co., The J. M. & L. A., Cleveland, Ohio  
 Peerless Foundry Co., Indianapolis, Ind.

## Pipe and Fittings—Stove

Meyer & Bro. Co., F., Peoria, Ill.  
 Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

## Pipe—Conductor

Barnes Metal Products Co., Chicago, Ill.  
 Berger Bros. Co., Philadelphia, Pa.  
 Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

## Punches

Bertsch & Co., Cambridge City, Ind.  
 Hyro Mfg. Co., New York, N. Y.  
 Interstate Machinery Co., Chicago, Ill.  
 Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.  
 W. A. Whitney Mfg. Co., Rockford, Ill.

## Punches—Combination Bench and Hand

Hyro Mfg. Co., New York, N. Y.

## Punches—Hand

Hyro Mfg. Co., New York, N. Y.  
 W. A. Whitney Mfg. Co., Rockford, Ill.

## Putty—Stove

Connors Paint Mfg. Co., Wm., Troy, N. Y.

## Radiator Cabinets

Hart &amp; Cooley Co., Holland, Mich.

## Ranges—Gas

The Beckwith Co., Dowagiac, Mich.  
 Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.  
 Richardson & Boynton Co., New York, N. Y.

## Registers—Warm Air

Auer Register Co., Cleveland, Ohio  
 Forest City-Walworth Run Foundries Co., Cleveland, Ohio  
 Hart & Cooley Co., Holland, Mich.  
 Henry Furnace & Fdy. Co., Cleveland, Ohio  
 Independent Register & Mfg. Co., Cleveland, Ohio  
 Lamneck & Co., W. E., Columbus, Ohio  
 Meyer & Bro. Co., F., Peoria, Ill.  
 Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.  
 Rock Island Register Co., Rock Island, Ill.  
 Symonds Register Co., St. Louis, Mo.

## Registers—Wood

American Wood Register Co., Plymouth, Ind.  
 Auer Register Co., Cleveland, Ohio  
 Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

## Regulators—Heat

Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.  
 H. M. Sheer Co., Chicago, Ill.  
 White Mfg. Co., Minneapolis, Minn.

## Ridging

American Rolling Mill Co., Middletown, Ohio  
 Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

## Rivets—Stove

Lamson & Sessions Co., Cleveland, Ohio  
 Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

## Rods—Stove

Lamson &amp; Sessions Co., Cleveland, Ohio

## Rolls—Forming

Bertsch & Co., Cambridge City, Ind.  
 Interstate Machinery Co., Chicago, Ill.

## Roofing Cement

Connors Paint Mfg. Co., Wm., Troy, N. Y.  
 Lastik Products Corp., Pittsburgh, Pa.

## Roof Paints

Lastik Products Corp., Pittsburgh, Pa.

## Roof—Flashing

Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

## Roofing—Iron and Steel

American Rolling Mill Co., Middletown, Ohio  
 Central Alloy Division, Republic Steel Corp., Youngstown, Ohio  
 Inland Steel Co., Chicago, Ill.  
 Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.  
 Osborn Co., The J. M. & L. A., Cleveland, Ohio  
 Ryerson & Sons, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

## Roofing—Tin

Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.  
 Taylor Co., N. & G., Philadelphia, Pa.

## Rubbish Burners

Hart &amp; Cooley Co., New Britain, Conn.

## Schools—Sheet Metal Pattern Drafting

St. Louis Technical Institute, St. Louis, Mo.

## Schools—Warm Air Heating

St. Louis Technical Institute, St. Louis, Mo.

## Screws—Hardened Metallic Drive

Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.  
 Parker-Kalon Corp., 200 Varick St., New York

## Screws—Hardened Self-Tapping, Sheet Metal

Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.  
 Parker-Kalon Corp., 200 Varick St., New York

## Screens—Perforated Metal

Harrington & King Perforating Co., Chicago, Ill.  
 Marshalltown Mfg. Co., Marshalltown, Ia.

## Shears—Hand and Power

Interstate Machinery Co., Chicago, Ill.  
 Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.  
 The Stanley Electric Tool Co., New Britain, Conn.  
 Viking Shear Co., Erie, Pa.

## Sheet Metal Screws—Hardened, Self-Tapping

Parker-Kalon Corp., 200 Varick St., New York

## Sheets—Alloy

Central Alloy Division, Republic Steel Corp., Youngstown, Ohio  
 International Nickel Co., New York, N. Y.

## Sheets—Black and Galvanized

American Rolling Mill Co., Middletown, Ohio  
 Central Alloy Division, Republic Steel Corp., Youngstown, Ohio  
 Inland Steel Co., Chicago, Ill.  
 Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.  
 Osborn Co., The J. M. & L. A., Cleveland, Ohio  
 Rockford Sheet Steel Co., Rockford, Ill.  
 Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.  
 Taylor Co., N. & G., Philadelphia, Pa.

## Sheets—Iron

American Rolling Mill Co., Middletown, Ohio  
 Central Alloy Division, Republic Steel Corp., Youngstown, Ohio  
 Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.  
 Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

## Sheets—Tin

Taylor Co., N. &amp; G., Philadelphia, Pa.

## Shingles and Tiles—Metal

Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

## Sifters—Ash

Diener Mfg. Co., G. W., Chicago, Ill.

## Sky Lights

Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

## Snips

Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

## Solder—Acid Core

Kester Solder Co., Chicago, Ill.

## Solder—Self-Fluxing

Kester Solder Co., Chicago, Ill.

## Solder—Rosin Core

Kester Solder Co., Chicago, Ill.

## Solder

Kester Solder Co., Chicago, Ill.  
 Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

## Soldering Coppers

Revere Copper &amp; Brass, Rome, N. Y.

## Soldering Furnaces

Diener Mfg. Co., G. W., Chicago, Ill.  
 Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

## Specialties—Hardware

Diener Mfg. Co., G. W., Chicago, Ill.

## Stars—Hard Iron Cleaning

Fanner Mfg. Co., Cleveland, Ohio

## Tinplate

Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.  
 Osborn Co., The J. M. & L. A., Cleveland, Ohio  
 Taylor Co., N. & G., Philadelphia, Pa.

## Tools—Tinsmith's

Bertsch & Co., Cambridge City, Ind.  
 Dries & Krump, Mfg. Co., Chicago, Ill.  
 Hyro Mfg. Co., New York, N. Y.  
 Interstate Machinery Co., Chicago, Ill.  
 Osborn Co., The J. M. & L. A., Cleveland, Ohio  
 Rockford Sheet Steel Co., Rockford, Ill.  
 Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.  
 The Stanley Works, New Britain, Conn.  
 Viking Shear Co., Erie, Pa.  
 Whitney Mfg. Co., W. A., Rockford, Ill.

## Torches

Diener Mfg. Co., G. W., Chicago, Ill.  
 Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

## Trade Extension

Copper & Brass Research Association  
 National Association of Flat Rolled Steel Manufacturers, Cleveland, Ohio

## Trimnings—Stove and Furnace

Fanner Mfg. Co., Cleveland, Ohio

## Vacuum Cleaner—Furnace

Brillion Furnace Co., Brillion, Wis.  
 National Super Service Co., Toledo, Ohio

## Ventilators

Aeolus Dickinson Co., Chicago, Ill.  
 Berger Bros. Co., Philadelphia, Pa.  
 Paul R. Jordan & Co., Indianapolis, Ind.  
 Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

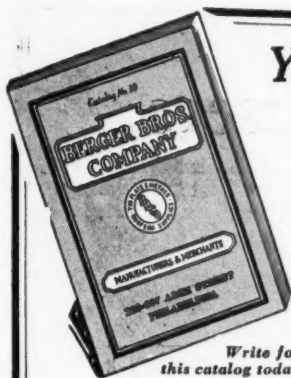
## Ventilators—Ceiling

Hart & Cooley Co., New Britain, Conn.  
 Henry Furnace & Fdy. Co., Cleveland, Ohio

## Wood Faces—Warm Air

Auer Register Co., Cleveland, Ohio  
 American Wood Register Co., Plymouth, Ind.  
 Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Say you saw it in AMERICAN ARTISAN—Thank you!



## Yes SIR--- SHEET METAL and ROOFING SUPPLIES

Systematically listed in this catalog for quick reference and CARRIED IN STOCK BY JOBBERS EVERYWHERE FOR QUICK DELIVERIES.

Write for this catalog today *Finest Quality—Fairest Price*

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*Demand  
"Champion" Miters  
and Fillings  
from your  
Jobber!*

**Braden**  
MANUFACTURING  
COMPANY  
TERRE HAUTE  
INDIANA

**Champion**  
PRODUCTS

Our Line  
Light and heavy machinery for all classes of sheet metal, plate and structural work.

SQUARING SHEAR  
Capacity 10X10 ft. shallow gap

**BERTSCH & CO.**  
Cambridge City Indiana



The "Torrid" Furnace is designed to give a tremendous amount of heat, much more than that furnished by the ordinary tinner's furnace.

A fuel saver and generating machine of the finest quality made at the price.

**GEO. W. DIENER MFG. CO.**

404 North Monticello Ave.

Chicago

## WHITNEY Lever PUNCHES

*They pay for themselves quickly  
in any shop*

For over  
20 years  
the leader



No. 2 Punch

Length  
23 in.  
Wt. 13 lbs.

This is the punch that made the Whitney line famous and it is still the punch that is preferred by thousands of men for accurate and quick punching. Depth of throat, 1 1/2 inches. Capacity, 3/4 inch through 1/4 inch iron or equivalent. Extra punches and dies in 13 stock sizes. 1/8 to 1/2 inch by 1/32 inch. Also made in 64ths special.

### Special Close Corner Punch No. 2

The No. 2 is also specially machined to make it a Close Corner Punch. It will then punch within less than 1/2 inch of the inside corner of Angle Iron. Extra punches and dies 1/8 to 9/32 inch. Also made in 64ths special.

### Channel Iron Punch

Every part of this punch and the No. 2 is interchangeable. Length, 23 inches. Weight, 16 1/2 lbs. Punches to center of 4 inch Channel Iron. Capacity, 3/4 inch hole through 1/4 inch iron. Same 13 sizes of extra punches and dies as used in No. 2 Punch. Also made in 64th sizes specially.



A Companion to  
No. 2 Punch

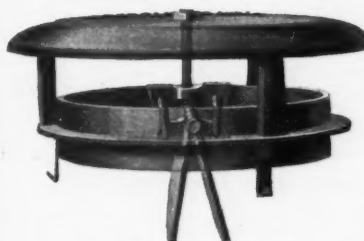
Ask Your Jobber for Tools and Punches

**W. A. WHITNEY MFG. CO.**

636 Race Street

Rockford, Ill.

## FLOOR VENTS FOR THEATERS



*Positive Air  
Control at  
Floor Level*

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Industrial Division of Paul Dickinson, Inc.

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IMMEDIATE SHIPMENT FROM STOCK

More than twenty kinds of prime quality sheets are carried in stock. There is a special sheet for every purpose. Also Bars, Angles, Rivets, Bolts, Tools and Metal-Working Machinery.

Write for Journal and Stock List

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Detroit

Milwaukee  
St. Louis

Jersey City  
Cincinnati

Buffalo  
Cleveland

Philadelphia  
Boston

# SHEETS

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## WANTS AND SALES

Yearly subscribers to the AMERICAN ARTISAN may insert advertisements of not more than fifty words in our Want and Sales Columns WITHOUT CHARGE for three insertions.

Such advertisements, however, must be limited to help or situation wanted, tools or equipment for sale, to exchange or to buy, business for sale or location desired, and must reach our office ten days prior to date of publication. This privilege is not extended to manufacturers or jobbers—or those making a business of buying and selling used machines—employment agencies and brokers.

When sending advertisement state whether your name or blind number is to be used.

## BUSINESS CHANCES

For Rent—Furnace and sheet metal shop on northwest side of Chicago. One-story brick, 28x100; furnace heat. In business at the same address for ten years and a money maker. Forced to retire on account of old age. Can be leased with or without machinery, from August 1, 1930. Address M-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

For Sale—My established tin and plumbing shop. This is in the best town between Mankato and Minneapolis. A big territory to draw from. Reason for selling, ill health and old age. Has been running the past 40 years. Good tools, 8 ft. brake and all that is necessary to make it a good shop. Address F-524, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

For Sale—Old established furnace and sheet metal business in city of 10,000 population in the Northwest. Sold 320 furnaces in the past six years. Will take \$5,000 cash to handle, or will accept good security for part of this. No trades. Address H-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

For Sale—Old established sheet metal shop near Chicago. Good line of customers. Cheap rent. Reason for selling, ill health. Address E-524, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Wanted to Buy—Half or whole interest in sheet metal shop preferably located in Kansas, Missouri, Iowa or Oklahoma, or will go in as working partner in same. Can furnish A-1 references. Address P-523, AMERICAN ARTISAN, 139 N. Clark Street, Chicago, Ill.

## SITUATION WANTED

Situation Wanted—Sheet metal shop superintendent, thoroughly experienced in assuming full responsibility on all types of inside shop fabricating as well as carrying to completion outside construction jobs. Can handle any number of men satisfactorily. Many years of experience working for the largest shops and contractors in the country. Experienced in ventilation, humidity control, blower systems, etc. Will go anywhere. Address K-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

## SITUATION WANTED

Sheet Metal Mechanic, 21 years' experience in ventilating, skylight, cornice, furnace, restaurant and general sheet metal work desires position. Capable of taking any sized job. Experienced foreman and estimator. Best of references from former employers. Married, sober, reliable and anxious to connect with firm where there is a future. Employed, but wish to make a change. Address R-523, AMERICAN ARTISAN, 139 N. Clark Street, Chicago, Ill.

Combination plumber, fitter and tinner would like to get in touch with hardware company that can use a steady, reliable man of this kind. Can lay out and estimate all branches of this line with an interest in view. Address B-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—By practical tinner on furnace and gutter work. Active, steady and reliable. Would like steady work in small town or city in Illinois. Can come at once. Address J-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Well known heating man of many years' experience as salesman and salesmanager in warm air, steam and water field will be open for change on August 1. Has specialized in fan layouts or can handle gas or oil. Address T-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—In small town with concern in need of a good all around sheet metal worker and furnace man. Capable of taking full charge of shop and can furnish best of reference. Address Bert Hawkins, 314 N. Howell, Owosso, Mich. W-523

Situation Wanted—By a first class sheet metal mechanic with 20 years' experience—12 years as working foreman. Can handle any kind of sheet metal contract, large or small. Would like to hear from some really alive shop—South preferred. Please state salary paid for permanent situation. Address P. O. Box 206, Andover, New York. X-523

Situation Wanted—By a combination man—plumbing, sheet metal and furnace. Twenty years at the trades. Forty years old, married, steady, sober; good on warm air heating, gas furnaces and lead work. Five years foreman. Can take charge and can leave at once. Address Y-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—Some sheet metal jobber or furnace manufacturer is looking for a man for a road position that has had 28 years' experience in the sheet metal business. 45 years old, married, and can give references from most any section of the country. Address Z-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Position Wanted—By experienced sheet metal worker. Experienced in all branches of the trade, on inside or outside work, gutters, furnaces, ventilation, and general work of any kind. Can run a shop, lay out and estimate. Middle aged, sober, and good mechanic. Prefer steady job. Address A-524, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

## MISCELLANEOUS

For Sale—Rock Island wall registers and boxes, as good as new, at a great sacrifice. Going out of the furnace business. Send for list and price. Address D-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

For Sale—Slightly used Utica Smokeless Cast Sectional Steam Boiler, 3000 feet of radiation. Address E. A. Knabe, Rock Falls, Illinois. C-524

## HELP WANTED

Wanted at Once—Ten experienced plumbing and tinning men to work as district managers, that are willing to invest from \$500 to \$1,000 in our company. We are opening shops in southern Illinois, Kentucky and southeastern Missouri. A real business opportunity. Address Independent Supply Co., Inc., West Frankfort, Ill. Y-522

Wanted—Sheet metal worker under 50 years of age. Must be good on furnace and gutter work and also have some knowledge of plumbing. This is a small town of 800 and 60 miles from Chicago. State age, experience and wages wanted in first letter. Address X-522, AMERICAN ARTISAN, 139 N. Clark St., Chicago.

Wanted—Sheet metal worker who is good on kitchen equipment work. Must be able to turn out first-class work in Monel and other non-corrosive metals and must be thoroughly familiar with welding of same. Address A-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Wanted—A live wire combination plumber and tinner to act as assistant manager; must be reliable, a business getter and know the trade. An opportunity for a good man. Two experienced helpers also needed. Address Independent Supply Co., Inc., West Frankfort, Ill. B-524

Wanted—Tinner and furnace man. Prefer young married man never over 35 years of age, with seven or eight years of experience. Steady job for right man and we will pay all he is worth. Address L-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Wanted—Salesmen who call on furnace installers and jobbers east of the Missouri river, to carry line of mineral paste that has proven a sales builder and repeats orders. Satisfactory commission on all orders. Write Western Mineral Products Co., Omaha, Neb. Z-522

Wanted—Two first-class all-around mechanics, familiar with cornice, skylights and ventilating. Address G-524, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

## TOOLS AND MACHINES

For Sale—Tinner's Machines, square shears, rolls, folders, etc., also large pipe dies, cutters and wrenches—safe, typewriter, etc. Ask for price and description of what you can use. Address City Tin Shop, Harbor Beach, Mich. D-524

I have several bench machines that I do not need. If interested, write for list. Address S. E. Ethridge, 1103 Denison St., Little Rock, Ark. C-523

For Sale—One No. 18 hand power rotary shear, almost new. Price, \$20. Address Chas. Barnum, Mankato, Minn. O-523

## BOOKS

The Revised Edition of the New Metal Worker Pattern Book by Kittridge and Associates is one book that should be in every shop. As a reference book alone it is indispensable. Over 500 9x11-inch pages with 895 illustrations. It covers the principles underlying practically every problem that is likely to come up in daily practice. Beginning with the selection and use of drawing tools, the author explains linear and geometrical drawing so clearly that one who has had no previous knowledge of arithmetic or drawing may understand these essentials and apply them. The most approved methods of pattern cutting are also given in the course of the work. Price, \$6.00, postpaid. Order from the Book Dept., AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

## BOOKS

**Exhaust and Blow Piping**, by Hayes—Exhaust and Blow Piping has had an unusually big demand. A fresh supply is now off the press and is in our hands for immediate delivery. It has an invaluable treatise on the planning, cost, estimation and installation of fan piping in all its branches, giving all necessary guidance in fan work blower and separator construction. 159 pages, 5x8. 51 figures. Cloth. \$2.00. Order from Book Department, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Illinois.

**Manual of Automotive Radiator Construction and Repair**, by F. L. Curfman and T. H. Leet—Anyone interested in Radiator Repairing will find the 185 pages of practical instructions and 120 illustrations showing actual construction and repairing a big help. In a condensed manner some four to five thousand answers to questions are given. It is thoroughly practical, as both authors are men of wide experience in this work. Printed in large, easy to read type. Measures 5 1/4 x 9 inches. Price \$2.50. Order from Book Department, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Here are the two books that most sheet metal workers and contractors classify as the most complete books on Sheet Metal Pattern Cutting. The Universal Sheet Metal Pattern Cutter, Vol. 1, deals with every phase of inside work, including Heating, Ventilating, Blower and Exhaust Piping Connections, Marine Sheet Metal Work, Automobile Sheet Metal Work, Machinery and Belt Guards, etc., Mensuration applied to Sheet Metal Work, etc., with many features of construction and Labor-Saving Methods are also given in detail.

Vol. 2 deals with every form of Outside and Architectural Sheet Metal Work. A treatise on Drawing, Full Size Detailing and Lettering, Construction of Cornices, Skylights, Molding, Copings, Electrically Illuminated Signs, etc.

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## PATENTS

HUBERT E. PECK  
Patent Attorney  
Barrister Bldg., WASHINGTON, D. C.

## WANTED

Manufacturers' agents to handle furnace cement, roofing paint and cement, calking compound. Exclusive territory, commission basis. Address E-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Established manufacturer of steel furnaces wants a capable salesman for Michigan and northern Indiana. Only those of proven reputation and ability to sell quality furnaces will be considered. Address F-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Illinois.

## CAFETERIA PROSPERITY

(Continued from page 27)

Analyzing the events of the last two months, you can readily realize that the Coal Industry is no longer on the defensive but is very definitely on the offensive.

Such an offense, emanating from a national source, is worthy of your unqualified backing—first, by your

moral support as an association, and then through the practical application of co-ordinated merchandising to each individual community.

The lead National Coal Association has taken will not be effective until each individual local coal organization puts into active practice the policy of co-ordinated merchandising with the retail heating contractors.

Then, and not until then, will the coal man cease to blame the furnace man and the furnace man tinners, and others blame the coal man for faulty heating. Work out a plan with your furnace dealers and heating contractors whereby they can service complaints which you run across in your business. This plan has worked out in several communities very well; in fact, I know one city where coal retailers turned over to one furnace dealer over ten thousand service jobs a year.

By working out such a service in your own communities you will not only hold your customers, but it will also relieve you of all servicing work, and thereby secure greater satisfaction for all concerned.

In some communities progressive coal merchants have called together in a joint meeting all the coal dealers, heating contractors, furnace installers, accessory merchants, etc., and have frankly discussed the opportunities of co-ordinated effort. The results have been that the furnace man, when he ran into a combustion difficulty, called in the coal man for a conference and, instead of passing the buck to each other, collectively found the difficulty and by correcting it served a satisfied customer.

We are living in an age of Cafeteria Prosperity: Wait, and you'll starve; grab a tray, and go out after business—and you'll get it.

## SPECIAL NOTICE!

### To Manufacturers in This Industry

The problem of preparing correct, attractive and forceful trade paper and direct mail copy can be solved economically. Whether you are interested in one advertisement or direct mail piece or an entire campaign we advise you to consult us. We have a wide experience in the warm air heating industry. MAT FRIEDMAN & ASSOCIATES, 155 N. Clark St., Chicago.

G523



Send for catalog today

## VIKING SHEAR

Compound LEVER Handle—Removable Blades

A child can work them

VIKING SHEAR CO., Erie, Pa.

When writing mention AMERICAN ARTISAN—Thank you!



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# In assembling fire-proof windows — Time and labor saving over \$12,000 on year's production

When machine screws were used by a leading manufacturer in assembling certain types of fire-proof windows and frames, it was necessary to cut tapping plates, drill and tap holes in the plates and then affix them to the backs of the frames.

All of these operations were eliminated by replacing machine screws with Hardened Self-tapping Sheet Metal Screws and a saving of several minutes is made in assembling each window. Since this manufacturer produces several hundred windows daily, the total time saved on a year's production is amazing. In fact, this saving is conservatively estimated at over \$12,000 a year.

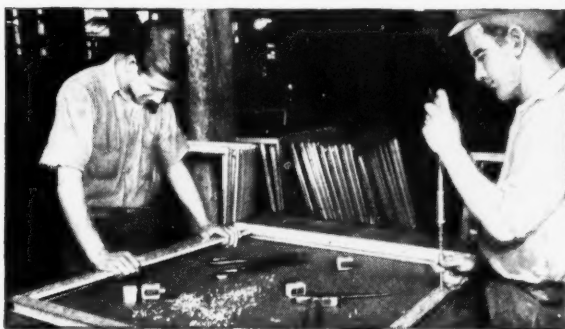
So easily and speedily are the assemblies made with Self-tapping Screws that one man now completes 28 windows in an hour's time. By the old method, 2 men were able to assemble only 20 windows in an hour. About 25 Sheet Metal Screws are used on each window and frame for fastening the stool to the base, attaching pull downs, fastening caps to the stiles and for attaching such fittings as scribe mouldings, exterior trim, shade brackets, window hinges, etc.

The economy effected on these applications is typical of the savings shown wherever Self-tapping Screws are used. Thousands of metal workers use them regularly as the easiest, quickest and cheapest means of joining sheet metal and making fastenings to sheet metal. Don't fail to test these Screws for your work. Tell us what you want to fasten—we'll send samples for a thorough trial.

PARKER-KALON CORPORATION  
190 Varick Street New York, N. Y.

## PARKER-KALON HARDENED SELF-TAPPING Sheet Metal Screws

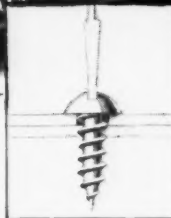
PATENTED — APR. 1, 1910 — NO. 1299232 — MAR. 28, 1922 — NO. 1411184  
AUG. 14, 1923 — NO. 1465148 — FEB. 10, 1925 — NO. 1526182 — OTHERS PENDING



## Self-tapping Sheet Metal Screws did it!



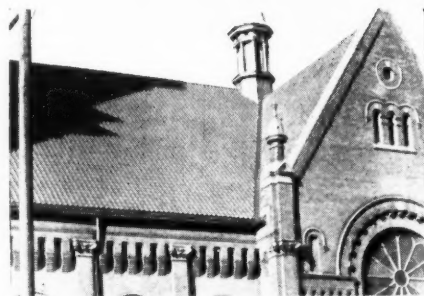
Just turn in the screw  
Only one operation neces-  
sary. Just turn the Sheet  
Metal Screw into a drilled  
or punched hole. It taps



—taps its own thread  
its own thread in the  
metal. Vibration or strains  
will not loosen the fast-  
enings.



On Every  
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how quickly you can line up a profitable job. Why not write for full details today . . . now?

### MILCOR STEEL COMPANY

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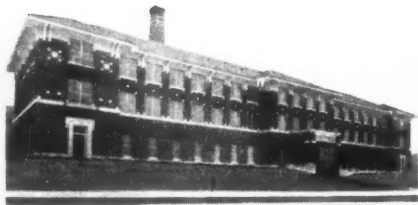
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